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Vol. 12

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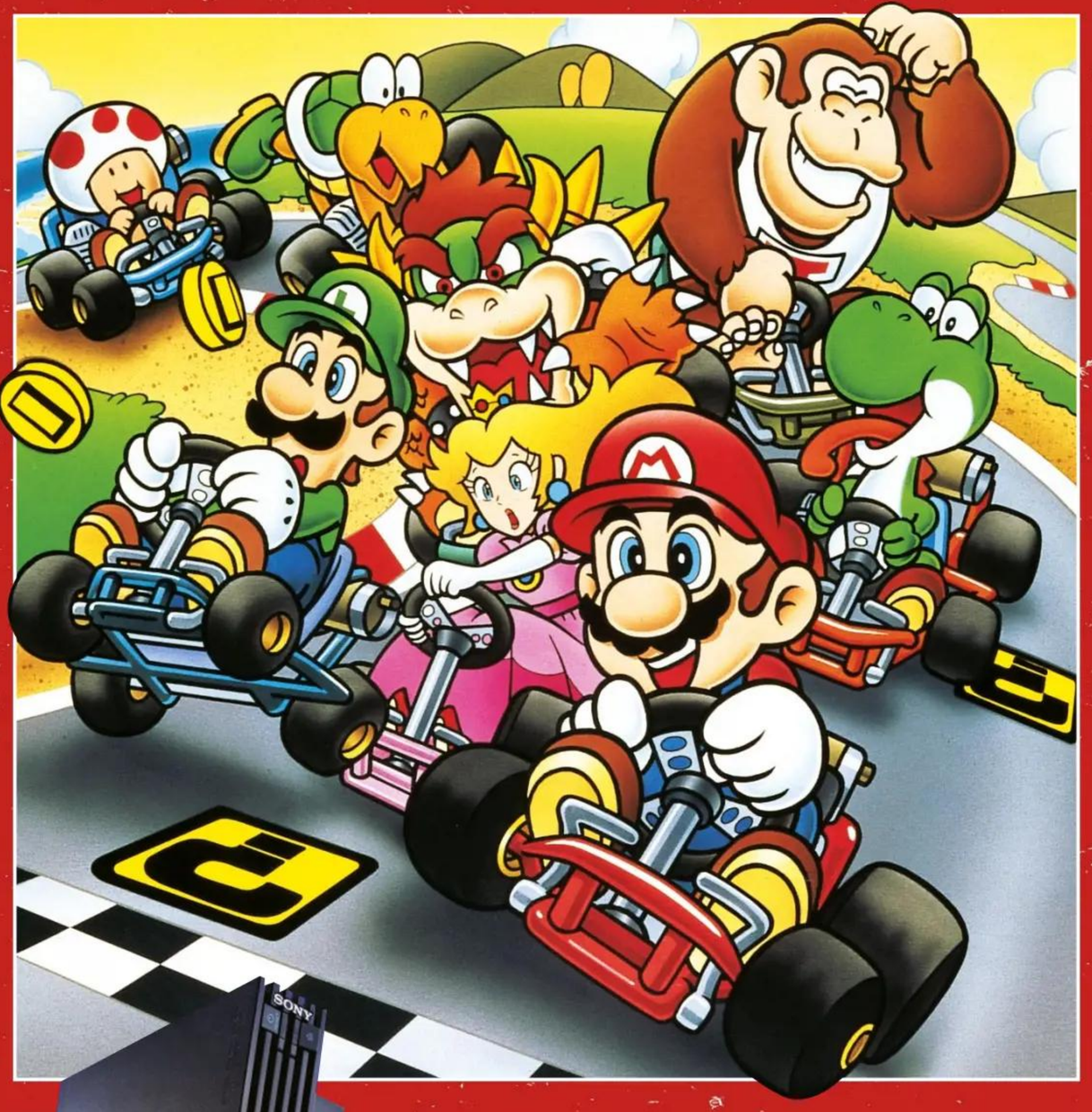

Digital Edition

TWELFTH EDITION

FUTURE

WELCOME TO THE

retro GAMER ANNUAL

If you're looking for fantastic features about gaming's past, you've certainly picked up the right bookazine. Inside, you'll discover some of the biggest **Retro Gamer** features of the last year, covering a variety of acclaimed games, revered franchises and fantastic hardware, all in one handy place. This tome also serves as a history guide, covering everything from the early Atari 2600 games released by Parker Bros, Taito's *Bubble Bobble* and the ZX Spectrum, to more modern classics like *World Of Warcraft*, Nintendo's DS and the time-spanning shenanigans of *Sonic Generations*. So what more are you waiting for? Grab yourself the warmest of beverages, slip into a nice, comfy pair of slippers and prepare for an amazing trip back in time. Enjoy.

FUTURE

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Advertising
Media packs are available on request
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Printed in the UK

Distributed by Marketforce – www.marketforce.co.uk
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Retro Gamer Annual Volume 11 (GAB7058)
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Future plc is a public company quoted on the London Stock Exchange (symbol: FUTR)
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THE ULTIMATE GUIDE TO CLASSIC VIDEOGAMING

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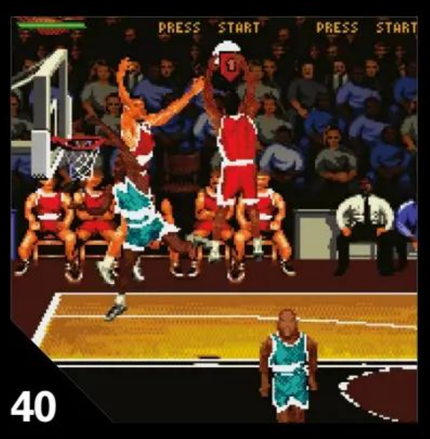

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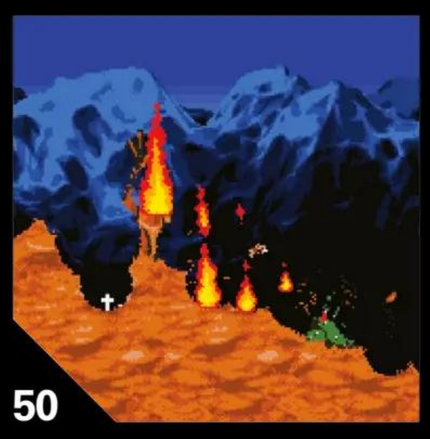
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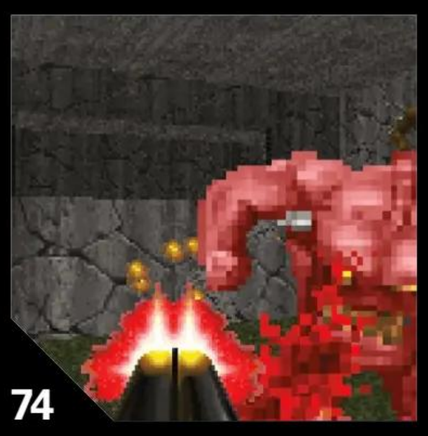
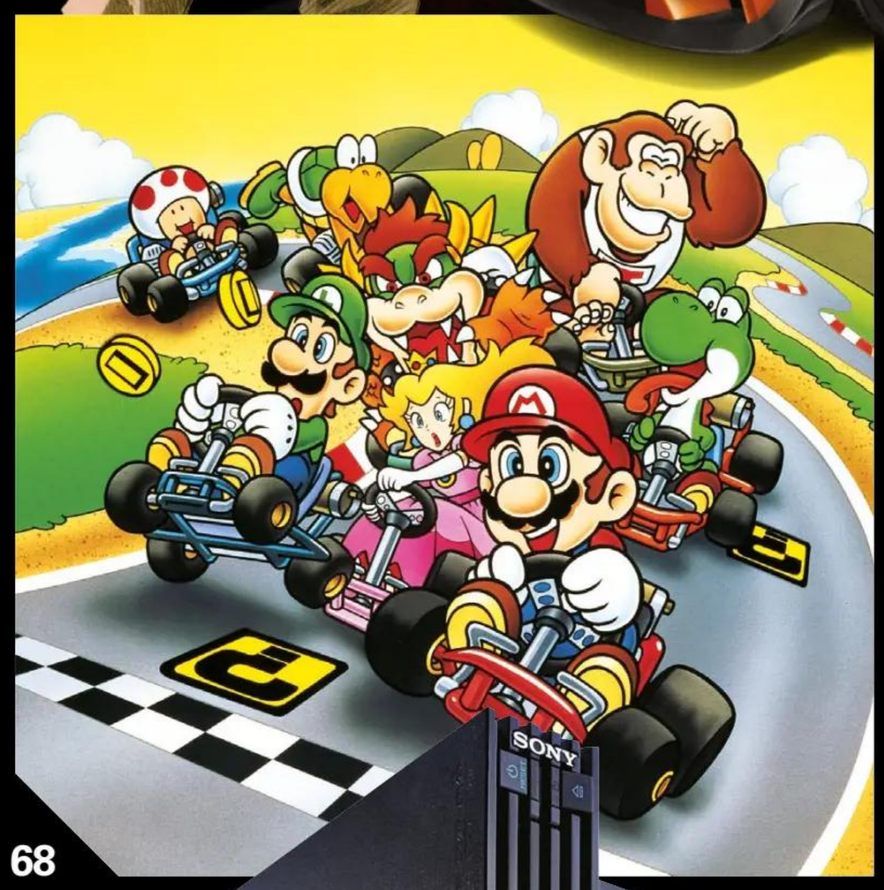


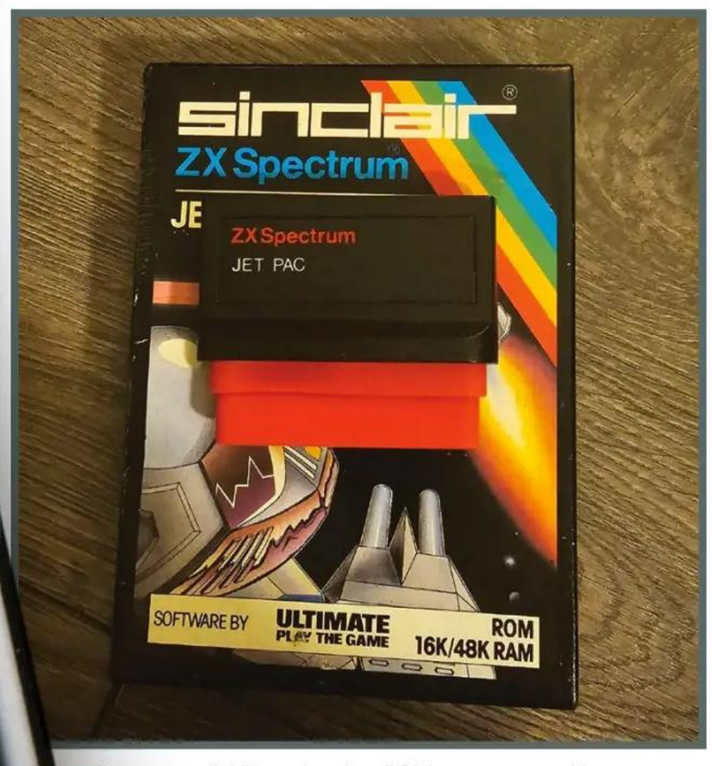


MASTERING THE ZX SPECTRUM

ON 21 APRIL 1982, SINCLAIR RESEARCH UNVEILED ITS LATEST HOME MICRO, THE ZX SPECTRUM. THIS SMALL AND IDIOSYNCRATIC DEVICE WOULD HELP KICKSTART THE UK GAMES INDUSTRY, INSPIRING PEOPLE ALL OVER THE COUNTRY TO START PROGRAMMING. IN THIS SPECIAL FEATURE, WE LEARN FROM SOME OF THEM JUST WHAT CREATING GAMES ON THIS MAGICAL YET FLAWED COMPUTER WAS LIKE

WORDS BY GRAEME MASON

» First seen in March 1982, the magazine *Sinclair User* soon eschewed the ZX81 for ZX Spectrum content.



» Due to unreliability, only a few ROM carts were sold. They fetch a high price today. Image credit: Jamie Williams.

» The Sinclair 128K Spectrum, an unfortunate casualty of the Amstrad Spectrum buyout. Image credit Paul Martin.

Image credit: Paul Martin

» A rare internal shot of an issue one Spectrum.

Released to an eager public that spring day in 1982, the success of the ZX Spectrum had been building for two years. When, in 1980, Sinclair (then Science Of Cambridge) released its breakthrough micro computer, the ZX80, it planted the seeds of what would eventually blossom into the UK's most successful computer of the Eighties.

Sales of the ZX80 were solid rather than spectacular, its value-for-money appeal neutered by a tiny memory (even by contemporary standards) and a flickering display. Undeterred, Sinclair built on the concept, releasing its first major hit a year later, the ZX81. Now users had a serious entry-level home computer, retailing for under £100 and enabling anybody to program using its in-built BASIC language. A 16K RAM pack expansion boosted the power and possibilities of the ZX81 further.

Despite the popularity of the ZX81 – it is estimated to have shifted over a million units in its lifetime – Sinclair was slow to take advantage. Who knows how much more cash the company could have earned if it had marketed its own 'datacorder' or 'data recorders', essentially a rebranded shoebox-style tape player? Instead, Sinclair focussed on its next entry in the affordable computer market – the ZX82.

The ZX82, also known as the ZX81 Colour, began development almost as soon as its predecessor was lining the shelves of computer dealers up and down the UK. Planned as a massive leap up from the ZX81, featuring a 'proper' keyboard, full-colour display and a useable amount of onboard RAM, a name change emphasised the distance further from its predecessors and its multi-coloured capabilities: ZX Spectrum. "I was really excited [about the Spectrum]," says Raffaele Cecco, author of some of the computer's finest later-era games, including *Exolon* and *Cybernoid*. "I loved my ZX81, but it was quite limited with its 1K of RAM, no colour and no sound." The ZX Spectrum would change all that.

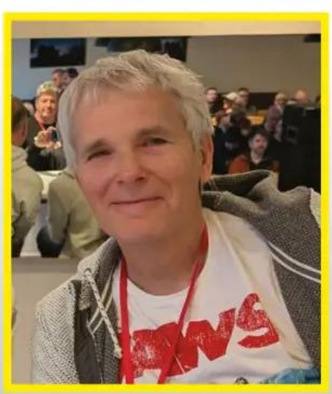
"I LOVED MY ZX81, BUT IT WAS QUITE LIMITED"
RAFFAELE CECCO

The first dedicated Sinclair magazine, *Sinclair User*, launched in March 1982. Edited by John Stericchi, the initial few issues focussed on the ZX81, its pages full of adverts for games, peripherals and utilities. It's fascinating to read Stericchi's Sinclairvoyance column about how the Sinclair ZX81, barely a year old itself, was already being overtaken by the incoming computer. "Speculation about the [ZX82] began almost as soon as the ZX81 appeared," he noted. "A ZX80 in 1980, a ZX81 in 1981. What could be more helpful than a ZX82?" Or rather, a Spectrum, the name changed to avoid the constant demand for a computer, plus to reflect the new colourful display. "I was entirely taken by surprise [by the Spectrum]," remembers Sandy White, author of the groundbreaking *Ant Attack*, published by Quicksilva. "Whatever you say about the keyboard, it was pretty cool and an amazing advance on the MK14, ZX80 and ZX81 keyboards. The overall feel and appearance are like nothing else and buried deep in my psyche!"

Also writing in that issue of *Sinclair User* was Andrew Hewson, boss of software house Hewson Consultants, latterly Hewson. An early adopter of the ZX80 and ZX81, Hewson's Helpline assisted new users throughout the magazine's run, ranging from basic questions to advanced programming techniques. In his book, *Hints & Tips For Videogame Pioneers*, Andrew notes the significance of the arrival of the Spectrum. "Before [the Spectrum], we were an embryonic industry serving a growing niche of enthusiasts. Machines like the ZX80 ▶

THE INTERVIEWEES

SANDY WHITE
■ *3D Ant Attack, Zombie Zombie, I, Of The Mask*



MIKE RICHARDSON
■ *Scuba Dive, Thanatos, Turbo Esprit*

RAFFAELE CECCO
■ *Exolon, Cybernoid, Stormlord*

DEAN BELFIELD
■ *Gauntlet III: The Final Quest, Sly Spy, Solar Invasion*

TOP TRICKS

WITH LITTLE OR NO HARDWARE SUPPORT, SPECTRUM CODERS RELIED ON THEIR CUNNING AND INGENUITY

SMOOTH SCROLLING

■ Many arcade conversions required their Spectrum counterparts to scroll. To do this quickly (as needed), one technique essentially 'races the beam', generating the image over two frames and drawing the background behind the first frame, with the sprites drawn ahead of the raster on the second frame.

SOUND OFF, ON

■ Initial users found melodious tunes challenging to extract from the Spectrum's tinny speaker. Yet by expertly manipulating the frequency of the Beeper, talented musicians such as Tim Follin and Martin Galway produced stunningly catchy music, effectively 'phasing' the sound instead of the singular, farty beep.

XOR LINE ON, LINE OFF

■ This is a very effective technique that was pioneered by the Stamper brothers at Ultimate, among others. Principally, each line of a sprite is wiped and then redrawn at its new position using a binary XOR logic gate. The result is you end up with a fast sprite that sometimes shimmers but doesn't overwrite the background.

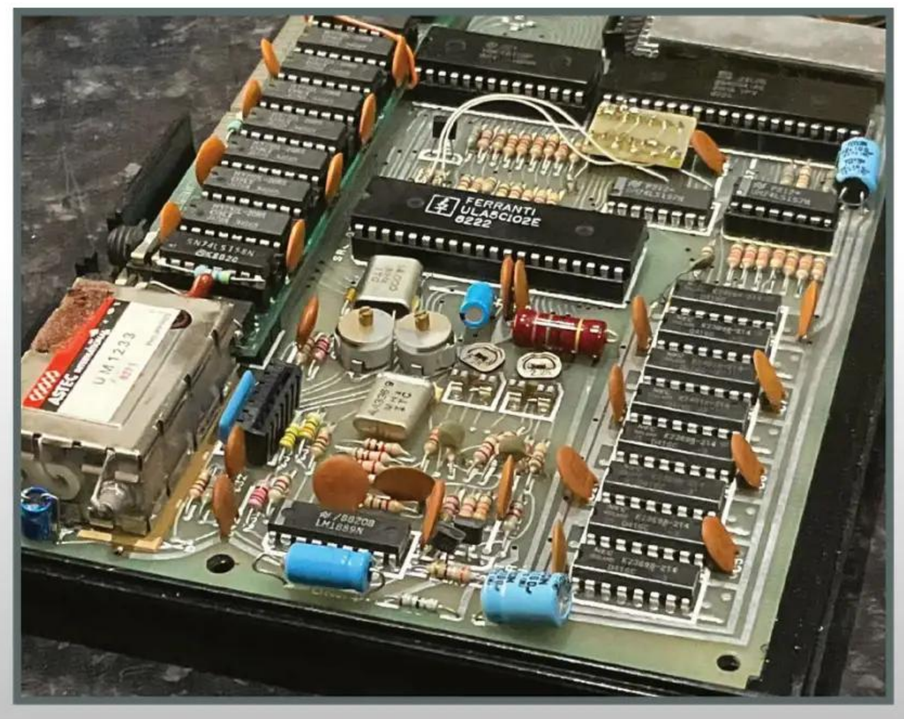
THANKS FOR THE MEMORY

■ Even with careful optimisation, fitting everything into the Spectrum's memory was testing for programmers. One trick was to display your game in 'widescreen' with black borders on the top and bottom using black ink on black paper. These areas are then used for runtime variables, invisible to the player.

▶ and ZX81 had taken us to that point, but their wider success was still tempered by the clunky design and rudimentary performance. When the Spectrum came along, we reached a tipping point." Retailing for either £125 (for the 16K model) or £175 (for the 48K model), Sinclair's new micro was by far the cheapest home computer on the market on release, which helped it burst into high-street retailers such as WHSmith. Yet the outside of the Spectrum, a compact, toy-like appearance, disguised the ingenuity and prudence of Sinclair. Let's take a PEEK at the inside. [Very clever – Ed]

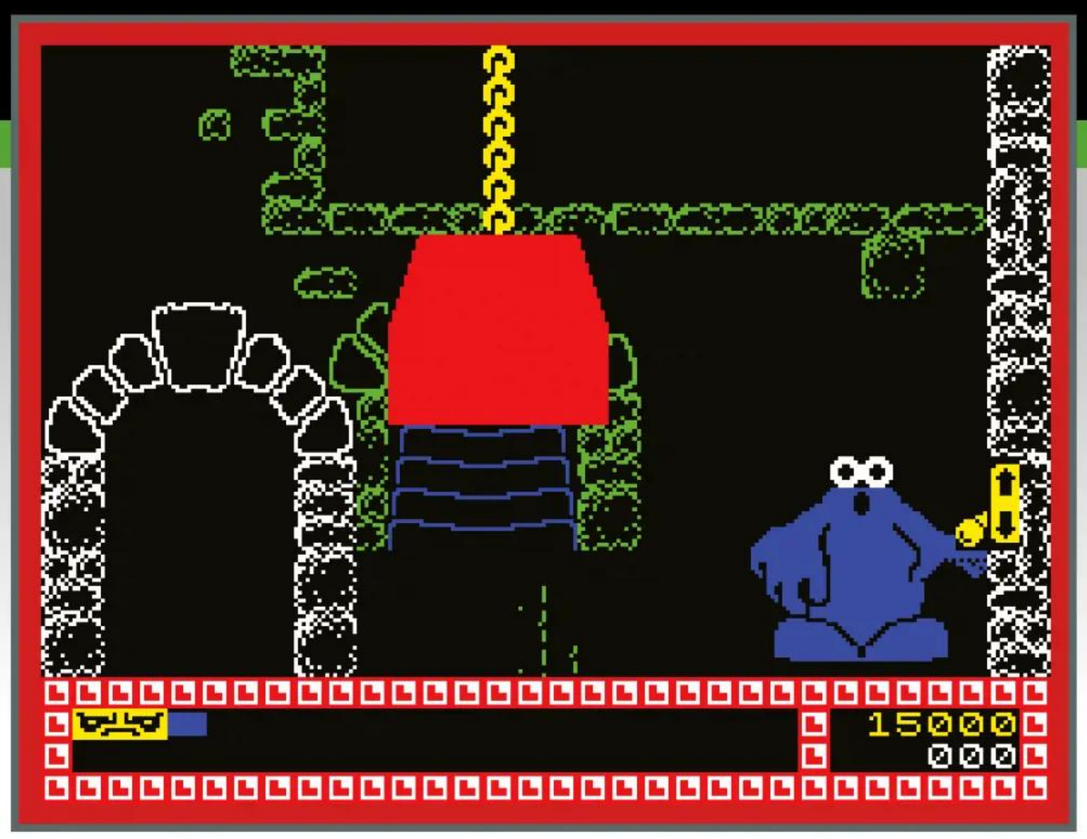
Firstly, the central processing unit, or CPU. Here, Sinclair decided not to change a winning team, keeping the Z80 processor of the ZX81. The Spectrum's Zilog Z80 chip is clocked at 3.5MHz via an onboard crystal, essentially to harmonise its performance with the computer's other components. Next to the processor is the Uncommitted Logic Array (ULA), a custom chip that manages video, keyboard, incoming and outgoing data (via a tape recorder), and sound, via a device colloquially known as the Beeper. Manufactured by Ferranti, based in Greater Manchester, the Spectrum's ULA allowed Sinclair to customise the Spectrum to its needs and is analogous to the modern FPGA used on the Spectrum Next, albeit with a lower transistor count and locked programmability to the user – once the Spectrum left the factory, the consumer was unable to make any changes to its functions.

For sound, the Spectrum has a loudspeaker – using the BEEP command allows the user to influence the pitch duration of a signal from the computer, the 'Beeper' pulsing when a 1 or 0 is written to bit four of port 254. While a primitive set-up, even for the time, skilled musician coders like Tim Follin extracted multiple channel sounds by pulsing the Beeper several times at different frequencies.



» At the centre of the Spectrum's motherboard sits the Ferranti ULA, the busy chip through which many of the Spectrum's functions channel.

Image Credit: Paul Martin



» *Sinclair User* looks inside the new Sinclair computer.

Stephen Adams looks inside Sinclair's latest machine and finds it has a lot in common with the ZX-81

Taking the lid off the Spectrum

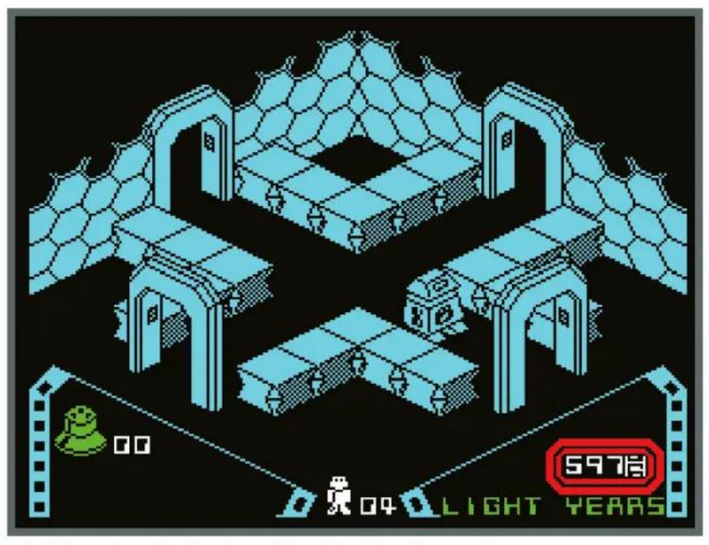
THE ZX SPECTRUM is very similar in shape and style to the ZX-81 and Sinclair's other computers. Sinclair has kept the original keyboard to save space but has provided a rubber sheet with moulded keys on it which fits over the keyboard membrane to give the keys — which on the ZX Spectrum are bigger than the ZX-81 — so that when a key is pressed it bends to give some feel to the touch.

That and the fact that the keys repeat if held down for longer than one second, even when using SHIFT, makes the keyboard much easier to use. The single keyword system — where commands like PRINT can be abbreviated to one key — has been retained, but two SHIFT keys are required to reach all the functions; one is called CAPS SHIFT and the other SYMBOL SHIFT, and they are on either side of the keyboard and as they are often

'The Spectrum is real value for money and easy to use. It has some peculiarities but they do not seem important when you look at what it can offer'

» [ZX Spectrum] The late Don Priestley's games had their own eye-catching style.

» [ZX Spectrum] Here is one of the Spectrum's finest isometric games, *La Abadia Del Crimen* (*The Abbey Of Crime*).



» [ZX Spectrum] Ultimate polished its Filmation engine throughout the mid-Eighties, as seen with *Alien 8*.

The Spectrum has 64K memory in total, the bottom 16K ROM housing the system's operating system (BASIC), which remains constantly on board while the 48K RAM is wiped whenever the user switches off the machine. Of that RAM, the screen display uses 6.75K, leaving 41.25K for programs. Meanwhile, the much-maligned keyboard was nonetheless a step up from Sinclair's previous efforts. "The rubber keys were very tactile," says Raffaele. "And I much preferred them to the ZX81's keyboard." Instructions could be typed via the expanding commands, helping novice users to make simple programs ("Hello Mum") within minutes of setting up their new computer.

By the summer of 1982, *Sinclair User* was reporting a pre-tax profit of £10 million for Sinclair, chiefly off the back of the ZX81. The same issue (cover dated June 1982) contained Robin Bradbeer's review of the ZX Spectrum. "The Spectrum is a colour and sound computer for the incredibly low price of £125," he began, frequently comparing it to its predecessor in nothing but glowing terms. Only the computer's sound drew criticism ("The internal speaker emits a 'raspberry'-like sound, set normally at a frequency of middle C") while noting that clever coding could achieve more, "It is also possible to have fractional intervals so that unusual scales can be generated."

Despite the excitement generated by its April launch, production delays meant that most people didn't get their hands on a shiny new Spectrum until Christmas 1982. For several months, the ZX81 still dominated the pages of *Sinclair User*, but that was about to change as 1983 dawned. Advertisements for Spectrum software and peripherals slowly edged out everything else. The peripherals – devices used to expand the capabilities of the Spectrum – swiftly became big business, not least for Sinclair itself. Its centrepiece was the Interface 1 and Microdrive, which permitted fast loading and saving and a port for connecting the Spectrum to a printer. Developers learned to rely on these rather than saving their progress to time-consuming cassette tape. Remembers Raffaele, "I used Microdrives for storing my source code – they were great, as I could load programs far quicker. I also had the little printer with its rolls of silver thermal paper, and I can still remember the burning smell!" ▶

> "THE OVERALL FEEL AND APPEARANCE ARE LIKE NOTHING ELSE"
>
> **SANDY WHITE**

IF IT BLEEDS, WE CAN STOP IT

UNSIGHTLY ATTRIBUTE CLASH WAS THE BANE OF SPECTRUM PROGRAMMERS AND ARTISTS – BUT THERE WERE WAYS OF AVOIDING IT...

Despite allowing manipulation of each individual pixel in the Spectrum's display, its colours were set in eight by eight squares. Each of these squares could only contain two colours; introducing another colour – such as a sprite walking past background scenery – would result in the third colour overwriting one of the existing colours, creating a distinctive and unsightly rainbow of hues.

Bypassing the issue was a Holy Grail for Spectrum games programmers. Early games ignored the problem – the *Wally Week* arcade adventures, for example – or used only two colours for the main game area, an effect that became known as 'monochrome', while adding more colours to areas where attribute clash was not an issue, such as in borders and control panels. Famous isometric Spectrum games such as *Knight Lore* used this method, but it created visibility issues in action-packed shoot-'em-ups, informally known as invisible bullet syndrome by frustrated gamers.

The problem could be partially dodged by using carefully designed graphics blocks and basing the game around them. An early originator of this technique was the recently passed Don Priestley, whose games contained massive sprites with minimal clash; but it wasn't until the 1986 shoot-'em-up *Light Force* that developers managed to shoehorn this into a faster-paced game, moving everything in blocks of eight pixels. Other games, most notably Virgin's *Dan Dare* (below) and Raffaele Cecco's *Exolon*, had monochrome sprites laid behind colourful foreground scenery, while Mike Singleton (*The Lords Of Midnight*) had his own solution, surrounding the vast sprites of *Dark Sceptre* with an eight-pixel thick black border.

SPEECHLESS??
Micro Speech lets ZX Spectrum talk!!
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μSPEECH
JUST PLUG IN AND USE
Micro Speech is easy to use – simply plug into your Spectrum and TV and enjoy a new dimension; instant voicing of all the keys ..... infinite vocabulary at your command ..... intonation to add character to speech ..... exciting new range of sound and speech games .....
IT'S AS EASY AS THIS!
LET S$= "me(rr))EE) krismus" will say "MERRY CHRISTMAS"
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Micro Speech talks through your TV's loudspeaker, ensuring top quality sound.
WHAT CAN'T IT DO!
Unlimited vocabulary means that Micro Speech can say anything ..... it can even be made to yodel! There is nothing it cannot say!
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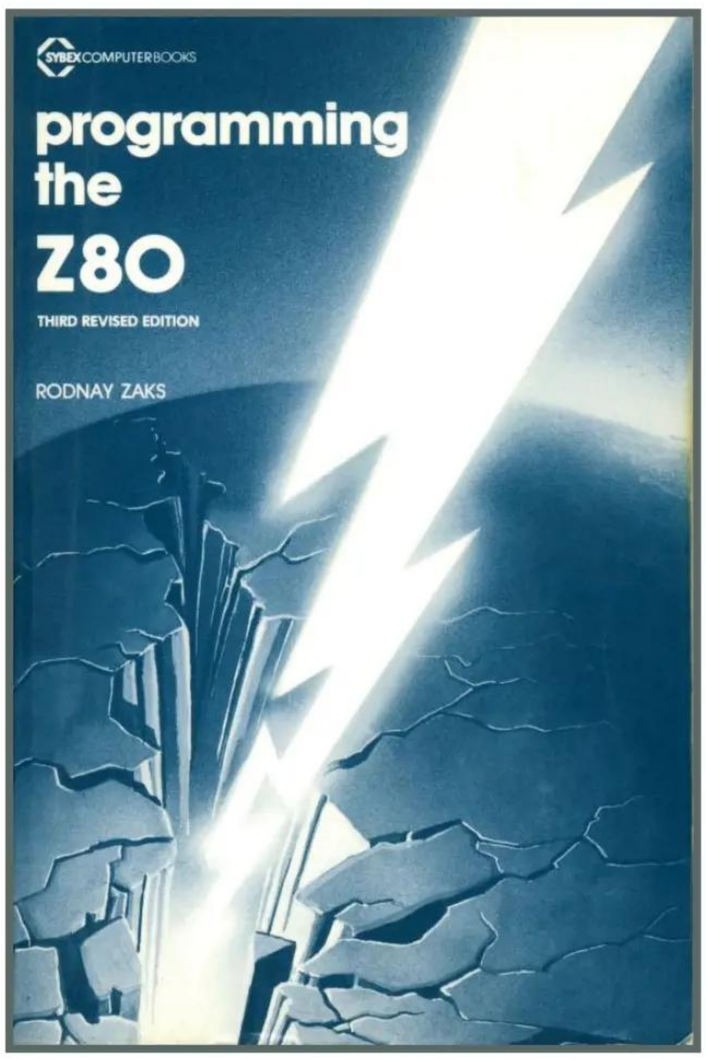


» Originally published in 1979, Rodnay Zaks' book on Z80 programming was invaluable to keen coders.

▶ Later, like his peers, Raffaele used a PC or development machine to build his code before transmitting it to the Spectrum for testing. But whether you programmed directly on a Spectrum or via another computer, one issue all coders had to tackle was the infamous attribute clash, more commonly known as colour clash.

While undoubtedly a revolution in fine colours, offering eight basic hues plus their BRIGHT equivalent, the Spectrum's display came with a price. With no sprite assistance from the Spectrum itself, its display permitted just two colours within each 8x8 block. It was efficient but ugly when the program introduced a third colour into the mix, overwriting one of the other colours and creating a mess of variable colours. "I just accepted the colour clash as a quirk of the Spectrum that you had to work around," recalls Raffaele. Savvy programmers designed their games carefully to minimise the effect. "I would make the character walk behind objects of a different colour so you wouldn't see the obvious clashing colour rectangle over the object," continues Raffaele. "But otherwise, the Spectrum's display actually had a decent resolution for the time; although it did have a strange, non-linear format in the way it stored each line of the display. Quite odd the first time you encountered it."

Like Raffaele, most coders tolerated attribute clash – but that didn't mean they had to like it. Notes Sandy, "It was horribly frustrating – I wanted *Ant Attack* to be in colour but hated the colour bleed around the characters." Unhappy with his efforts to correct the issue, the programmer gave up and made his debut game monochrome, a customary last resort. "But by the time *Zombie Zombie* came around, I'd made peace with it and accepted the artefacts," he smiles.

Set at 256x192 pixels, there's a clever trick to the Sinclair computer's display. Drawing a pixel for the Spectrum's screen requires two sets of information from the RAM: its bitmap data and its colour data, stored in a grid of rows and columns. This fetch is the ULA's job, but there's not normally enough time for the chip to poll the RAM twice. Instead, it employs a

> "I JUST ACCEPTED THE COLOUR CLASH AS A QUIRK OF THE SPECTRUM"
>
> **RAFFAELE CECCO**

» [ZX Spectrum] Escaping giant ants in Sandy White's groundbreaking *Ant Attack*.

» [ZX Spectrum] Games such as Steve Turner's *Avalon* offered real worlds and enemies that hunted you from screen to screen.

ESSENTIAL PERIPHERALS

JOYSTICK INTERFACE

■ Quite simply, if you wanted to play games, you needed a joystick interface, and Kempston emerged as the best-supported brand in the mid-Eighties. Plugging into the Spectrum's expansion bus, the interface supplied one or more standard nine-pin slots, compatible with almost all joysticks.

ZX MICRODRIVE

sinclair
ZX Microdrive
At least 85K on-line storage
High-speed LOAD and SAVE
Link up to 8 ZX Microdrives
Free demonstration cartridge
For use with ZX Interface 1 (not included)

■ A high-speed mass storage device that utilised a tape loop to mimic a disk drive, giving fast loading and random access. A purported boon to both users and programmers, the Microdrive was sadly unreliable, and while significantly cheaper than contemporary disk drives, it didn't plug directly into the Spectrum, requiring a…

ZX INTERFACE 1

■ Released alongside the Microdrive, the Interface 1 allowed control of up to eight Microdrives and included an RS232 standard interface for connection to hardware such as a printer. Unfortunately, purchasing the set cost £80, approximately £400 today – relatively cheap, yes, but still out of reach for many users.

mode called DRAM Page Read, where the bitmap and colour data feature within the same row, enabling the ULA to select the row once per pixel and then only needing to select the relevant columns twice. This efficiency permitted the draw to work twice as fast while sometimes creating a slightly messy display, most notably as games loaded into the computer's memory.

As developers wrestled with the Spectrum, their skills improved, which was reflected in the changing software market. Serious programmers quickly realised that the Spectrum's in-built BASIC language wasn't up to running fast, exciting action computer games. "You had to write [your games] in machine code," notes Raffaele. "It was many, many times faster than BASIC." Machine code – a series of binary numbers incomprehensible to the untrained human eye – allowed the programmer to tap directly into the Spectrum, allowing them superior control over all its functions. Bob Pape, author of the legendary arcade conversion *R-Type*, remembers reading a magazine article that explored the computer beyond BASIC in his book, *It's Behind You*. "[It was] about how you could use ROM routines instead of BASIC commands to do things like clear the screen and make a single pixel appear on-screen quickly instead of using the BASIC PLOT command. I thought, hmmm, if I could do this 64 times, then I could make an 8x8 pixel graphic appear anywhere on the screen I liked."

Bob duly constructed his graphic via simple loops in machine code, eventually getting it to appear anywhere on the screen instantaneously. Despite the potentially dynamic results, writing in machine code was often dull and laborious – and prone to unexpected errors. Books such as Rodnay Zaks' *Programming The Z80* had already been around for several years when early computing book specialist Melbourne House published Drs Ian Logan and Frank O'Hara's *The*

» [ZX Spectrum] Fast and furious, *Chase HQ* shows that even racing games can get pulses running on the Spectrum.

» [ZX Spectrum] The movie licence *Cobra* is the work of one of the Spectrum's most talented coders, the late Jonathan 'Joffa' Smith.

» [ZX Spectrum] Fast 3D terrain scrolling is an impressive feature of Mike Richardson's *Combat Lynx* (see **Retro Gamer** 271).

» [ZX Spectrum] An explosion of colour in Raffaele Cecco's awesome *Cybernoid*. Its sequel is also great.

» [ZX Spectrum] Many games, such as Simon Brattel's *Dark Star*, began life as a demo, in this case, of a rolling starfield.

» [ZX Spectrum] An early progenitor of fast, action-packed gaming on the Spectrum, *Deathchase*.

SIR CLIVE SINCLAIR'S DREAM WAS TO HAVE THE SPECTRUM AT THE CENTRE OF A MASS OF TECH. HERE ARE THE MOST ESSENTIAL ADD-ON FOR IT

MULTIFACE ONE

■ AKA The Hacker's Delight. Romantic Robot made its name with the Multiface One, a user-friendly add-on enabling users to pause, save and hack into virtually any ZX Spectrum software. When combined with another hacking device, the Genie, the magic really was out of the bottle.

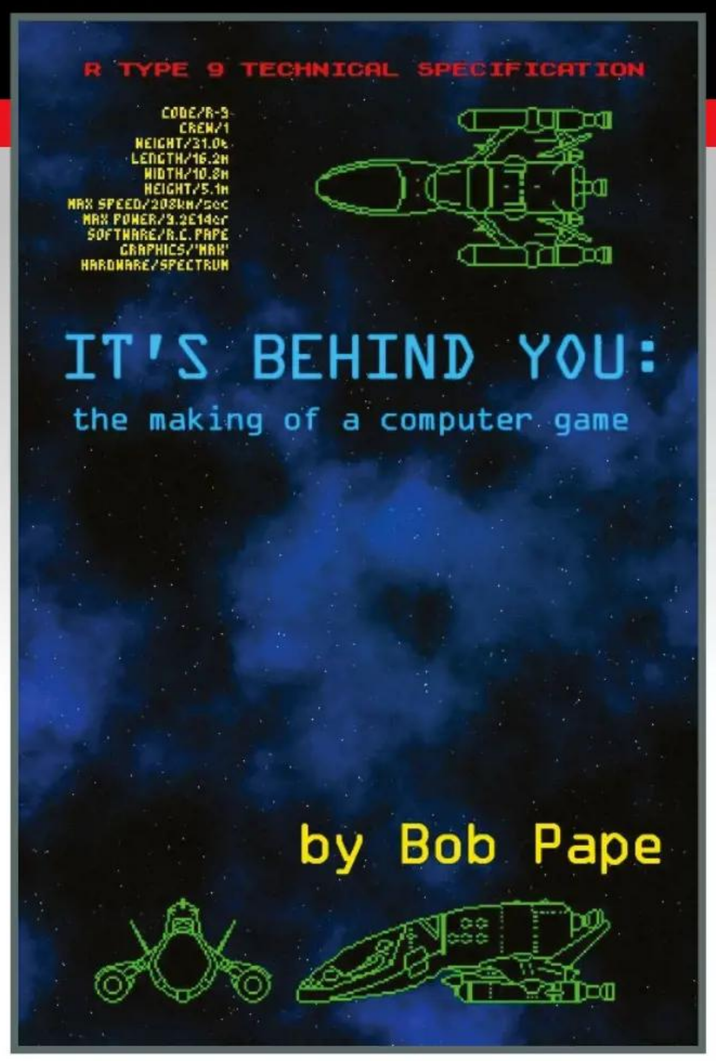
CASSETTE PLAYER

■ Unlike the Spectrum's great rival, the Commodore 64, any standard tape player could load games into its memory. A tape counter was a bonus; otherwise, most players worked perfectly well. Usually included with bundles from shops such as Dixons, but typically retailing for around £20.

DK'TRONICS KEYBOARD

■ While iconic today, the Spectrum's dead flesh keyboard wasn't the best for heavy users. A must for programmers, in particular, add-on keyboards such as this encased the computer, transforming it into a more professional-looking and easier-to-use unit. Some even boasted a separate numeric keypad.

Cassette Player Image credit: Getty Images /Dale Robins



» Bob Pape details his efforts in producing one of the Spectrum's finest arcade conversions, *R-Type*, in his excellent book.

» [ZX Spectrum] Ignoring attribute clash, *Wally Week* style.

» [ZX Spectrum] Bob Pape's amazing arcade port of *R-Type*.

» The Spectrum spawned a varied market for add-ons.

» [ZX Spectrum] Realtime's remarkable shoot-'em-up, *Starglider*.

▶ *Complete Spectrum ROM Disassembly* in 1983, and the machine code future began to formulate. Assembler utilities such as Hisoft's popular Devpac and Crystal Computing's Zeus then enabled them to program machine code by using the assembler's more human-friendly language before the utility converted the result to binary machine code. Each assembly instruction was typically matched to one machine code instruction.

The next task was how to get even more tricks and optimisation via machine code. "You'd look at which instructions [in the machine code] were faster than others," notes Raffaele. "For example, if you were wiping the screen – filling it with zeroes – it was quicker to point the Z80 stack at the screen, then 'push' zeroes onto the stack, rather than clearing the screen in more obvious ways." As always on the Spectrum, developers faced an uphill battle to get their games working – and working fast, or even at an acceptable pace. "You could also do things like sequentially repeating the same instruction rather than perform them in a loop," adds Raffaele, "as the latter is slower due to the looping command."

Most programmers improved with each game, refining the techniques learned from project to project. A good example is Mike Richardson, honing his 3D skills in *Combat Lynx* before further expanding them for what many consider one of the ZX Spectrum's finest games. "For *Turbo Esprit*, I reused the fundamental drawing techniques I'd learned on *Combat Lynx*," says Mike. "The 3D is based on a lookup table indexed by the quantised

THIS YEAR'S MODEL

RETRO GAMER LOOKS AT EACH MODEL OF SPECTRUM

ZX SPECTRUM 16K

1982

■ Released in the spring of 1982, the Spectrum's small design, low price and tangible improvement over the ZX80 and ZX81 – colour! Actual graphics! – helped it become a best-seller and usher in a new era of technology. Users could upgrade their 16K models with an internal 32K RAM.

ZX SPECTRUM 48K

1982

■ This 'enhanced' version of the Spectrum was identical to the 16K model save for the extra 32K of RAM included. Both models featured the rubber keyboard and an aesthetically pleasing design. Its low price, high-resolution display and relative wealth of colours soon made it a home for gamers.

ZX SPECTRUM 48K+

1984

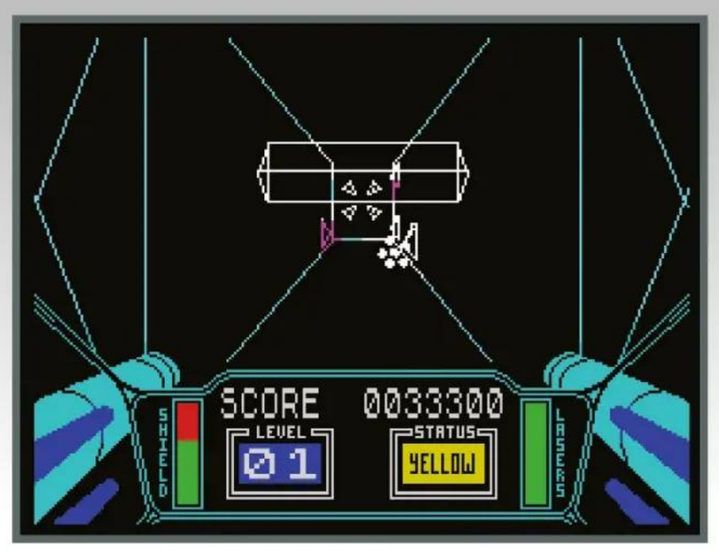
■ Stung by criticism of the Spectrum's rubber keyboard, Sinclair developed the 48K+ model. Its improvements were a brand-new case, inspired by the Sinclair QL range, and a reset button. Despite good sales, the 48K+ had a high failure rate and inadvertently helped scupper Sinclair's 128K machine.

ZX SPECTRUM 128K

1986

■ Sinclair's final Spectrum endured a difficult time, with substantial remaining stocks of its predecessor delaying its UK release until early 1986. Dubbed the 'toast rack' due to its prominent external heatsink, it improved the sound, but not the display, and was withdrawn once Amstrad purchased the name.

» [ZX Spectrum] Raffaele Cecco's *Exolon* didn't totally avoid colour clash, but it distracted you enough so you didn't notice it.



» [ZX Spectrum] Vector graphics specialists Realtime got its shooters moving fast enough for exciting gameplay.

» [ZX Spectrum] Pete Cooke's background in mathematics no doubt helped him construct the beautifully shaded environments of *Tau Ceti*.

distance from the viewpoint. The table contained constants mostly for 3D to screen coordinate conversion, which I modified until the scene looked right." Clever stuff, but there were always limits: in *Turbo Esprit*'s case, Mike could not scroll the screen around corners, instead resorting to flipping the display 90-degrees.

Yet designing *Turbo Esprit*'s complex city wasn't even half the battle – Mike needed to populate his world, all within the Spectrum's memory.

"The biggest challenge was the car AI," he explains. "This consisted of a 2D map of the junction ahead of the player's car and the (up to) four roads that led into it." This internal map helped *Turbo Esprit*'s collision detection, AI and scene rendering, creating a new junction model as the player races through the existing one. The enemy cars and the many innocent city motorists only existed with each model, disappearing into the ether once the player moved on.

> "I USED A STATE MACHINE THAT RAN ENTIRELY IN CPU REGISTERS TO DRAW TRIANGLES ON THE SCREEN"
>
> **SANDY WHITE**

As a consequence of these steady improvements, early notable releases, such as *Ant Attack*, laid a template for future games, defining the techniques that were smoothed and adapted over the years. "Very simply, the cubes [that make up the game] are drawn in order, back to front – sprites too," explains Sandy. "Hidden objects then take care of themselves – it wasn't very efficient, but it worked." For Sandy's final game, the mind-blowing *I, Of The Mask*, the coder employed even more trickery. "I used a state machine that ran entirely in CPU registers to draw triangles on the screen," he says. "No screen byte is ever written more than once per frame, saving loads of cycles." Inevitably, programmers would learn from each other's work; in the case of *Ant Attack*, Ultimate took its basis and introduced a flick-screen environment boasting large, cartoon and life-like characters. The result, *Knight Lore*, revolutionised ZX Spectrum games. Meanwhile, for its innovative Freescape engine, Incentive Software reverse-engineered *I, Of The Mask*, utilising many of its traits in *Driller*.

By 1984, Sinclair, having released the stop-gap Spectrum 48K+ (of which the most significant improvements were a reset button and proper keyboard), was busy on a new Spectrum proper, the 128K. With its vastly superior memory capacity and a new sound ▶

ZX SPECTRUM +2
1987

■ Ever the pragmatist, Alan Sugar wasted little time taking the design of Sinclair's 128K and moulding it into the 128K +2. Now, with an in-built cassette player and two joystick ports (albeit proprietary), the Sinclair was at last being directly marketed to its primary users: gamers.

ZX SPECTRUM +3
1987

■ The Spectrum finally got its own built-in disk drive in 1987, inside a similar case to the +2. However, rather than using the industry standard 3.5-inch, Amstrad opted for its own 3-inch disks, and with games costing an extra five pounds or more on the new format, support for the +3 was thin.

ZX SPECTRUM +2A
1987

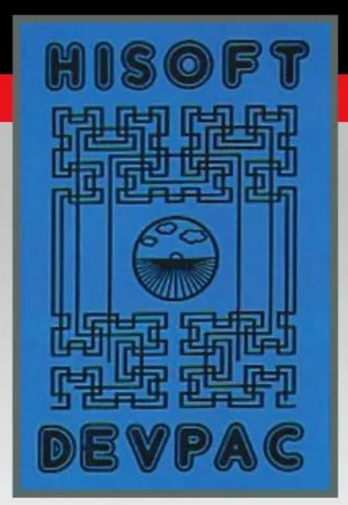
■ Released shortly after the +3, this +2 update shares much of the +3's internal circuitry, with connections for a datacorder instead of disk drive. A new black case differentiates the +2A from the earlier model, although the update meant that some older games were no longer compatible.

ZX SPECTRUM NEXT
2017

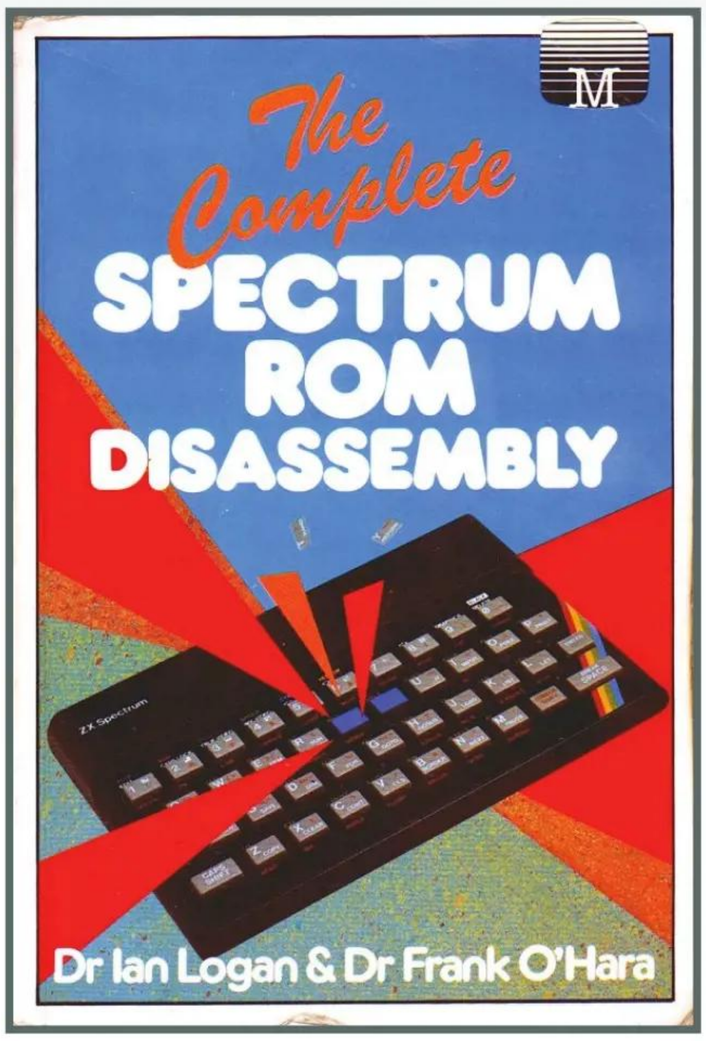
■ A new Spectrum for the 21st century, the ZX Spectrum Next began life in Brazil before a successful Kickstarter campaign, backed by the Spectrum's original designer Rick Dickinson, launched in 2017. The Next utilises an FPGA processor, giving the unit considerably more power.

Image credit: ZX Spectrum 16K, Steve Nunn / ZX Spectrum +2, Gavin Yeo / ZX Spectrum +2A Sean Inglis, ZX Spectrum 48K+ Bill Bertram (bit.ly/licence_1)

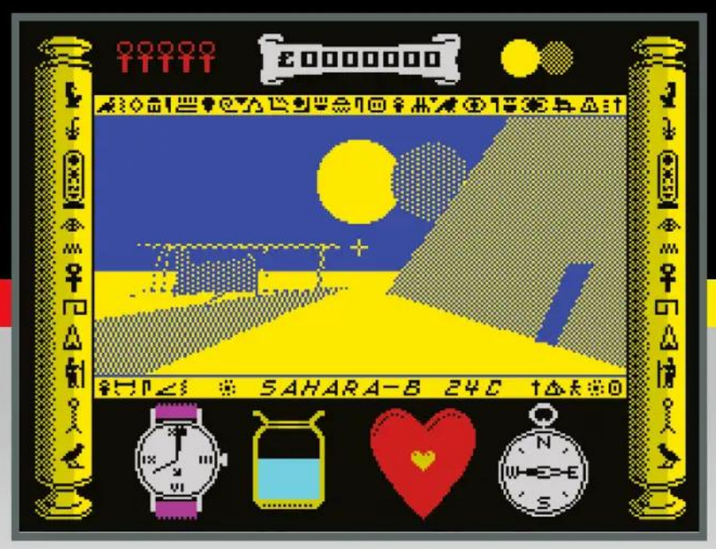
» Sandy White coded *Ant Attack* directly on a ZX Spectrum.



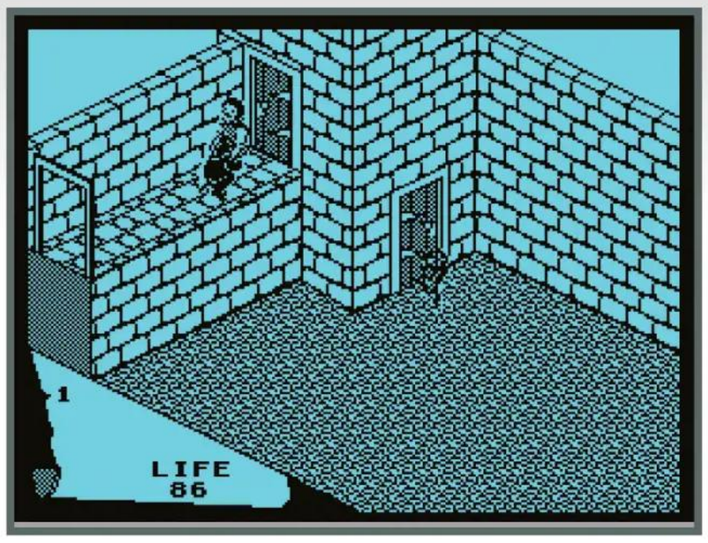
» Hisoft's Devpac is one of many Spectrum assembler utilities.



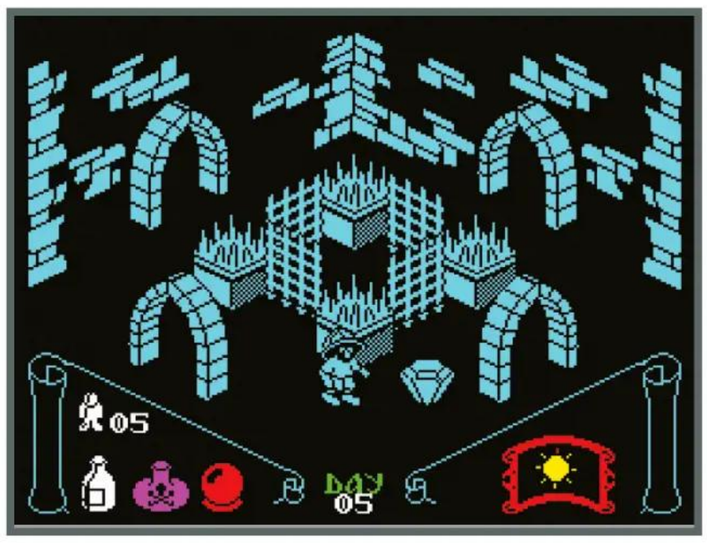
» Melbourne House's bible for anyone wanting to program on the Spectrum.



» [ZX Spectrum] Incentive's Freescape engine, transplanted to 1930s Egypt for *Total Eclipse*.



» [ZX Spectrum] The brilliant *Fairlight*, a tour-de-force medieaval adventure by Bo Jangeborg.



» [ZX Spectrum] The technical cartoon wonder that spawned a genre: *Knight Lore*.

» [ZX Spectrum] Coders like Durell's Mike Richardson created incredible feats on the Spectrum.

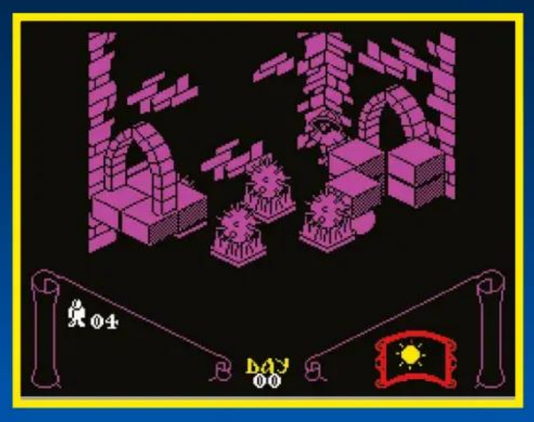
» [ZX Spectrum] Ultimate's *Jetpac* introduced arcade-style gaming to the Spectrum.

» [ZX Spectrum] There is colour everywhere in *Rainbow Islands* – with a dash of clash.

HOW DO THEY DO THAT?!

JETPAC

■ Smooth, fast and exciting, Ultimate's first game remains one of its most famous, a slick arcade game that hovered miles above all of its competition back in 1983. Coding techniques such as XOR sprites helped make *Jetpac* a technically stunning game despite the simplicity of its gameplay.



KNIGHT LORE

■ Having made its name with fast 2D action games such as *Jetpac* and *Atic Atac*, Ultimate unveiled this technical marvel in 1984. *Knight Lore*'s smooth cartoon-like graphics, welded to the template set down by *Ant Attack*, incited a new genre and dropped jaws everywhere.

I, OF THE MASK

■ In 1985, Sandy '*Ant Attack*' White stunned Spectrum gamers with this high-speed 3D game. Based on a tech demo, the player races around a maze, searching for the parts of a robot. Thanks to its incredible look and speed, *I, Of The Mask* was undoubtedly ahead of its time in these respects.

TURBO ESPRIT

■ *Turbo Esprit* puts the player behind the wheel of the eponymous vehicle, charging around a living and breathing city while attempting to capture drug dealers. Each city's sheer size and activity is astonishing, making it a tremendously immersive experience, whether you're catching criminals or just racing about.

system courtesy of the General Instruments AY-3-8912 chip, the 128K Spectrum should have ushered in a bold new era for the Spectrum software market. While backwards compatible – mostly – in 48K mode, the 128K model brought no further visual improvements at a time when users coveted graphical fidelity. Ponders Sandy, "[Sinclair] should have taken all that revenue from Spectrum sales and ploughed it straight back into a faster, better graphics, backwards compatible Spectrum II. Something like the Spectrum Next!"

Worse, Sinclair delayed the UK launch of its latest computer until the Spring of 1986, mainly due to pressure from retailers over remaining stocks of the 48K+ model. Then came the Amstrad buyout in April of the same year, just four years since the Spectrum's stunning debut. The subsequent Amstrad Spectrums, the 128K +2, +2A and +3 were undoubtedly more practical but lacked the soul and eccentricity of the original rubber-keyed wonder.

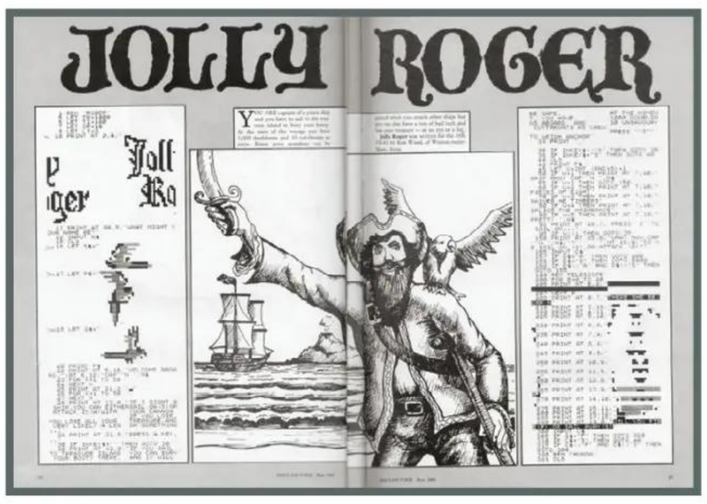
The Spectrum's place as a games machine was always an uncomfortable concept at Sinclair, which pitched the computer as an educational tool more than an entertainment centre. "The [Spectrum] did take on its own personality as a games machine that perhaps Sinclair hadn't anticipated," notes Raffaele. "They could have doubled down on the games angle – but that said, it was a brilliant educational machine for a lot of programmers interested in games!" The Speccy looked like no other computer on the market; it had zero hardware support for many essential computer game functions, such as scrolling and sprites. It had terrible sound, a limited and unexpandable 48K memory, and unusual quirks such as attribute clash; yet it captured a nation's heart as the plucky underdog of unmistakably British design. "From a hardware perspective, I think the Spectrum was nearly perfect considering the price point," notes Raffaele. "A sound chip would have been nice, but I suppose it would have increased the price."

Despite the long nights figuring out the inner workings of the Z80 processor or debugging machine code, most programmers have fond memories of their time with the ZX Spectrum. "That warmhearted little beast means more to me now than it ever has," smiles Sandy White. "Yes, it's a fusion of nostalgia for a misremembered past, and it ties into today's clan of retro enthusiasts and reboots, such as the Spectrum Next. But there's a Spectrum on the desk in front of me right now: that's got to tell you something." For Raffaele Cecco, who made his name on the Spectrum – even as far as penning a regular column for *Crash* magazine – it was the start of a career that continues today. "The fun of learning new things [on the Spectrum] was addictive – I spent hours in front of the screen nearly every day. I learned enough to get my first games job at Mikro-Gen aged 17, before I worked on different machines and started my own company as the industry matured. But throughout it all, I've benefitted from the Spectrum ethos of doing a lot with not very much." ✱

"I'VE BENEFITTED FROM THE SPECTRUM ETHOS OF DOING A LOT WITH NOT VERY MUCH"

RAFFAELE CECCO

Our special thanks to Raffaele Cecco, Sandy White, Mike Richardson, Jas Austin and Dean Belfield for his technical insight and expertise that made this feature possible. This month, Dean is taking part in the Manchester 10K run in support of the Pancreatic Cancer UK charity, the disease having recently claimed his friend Geoff Follin, part of the legendary Follin brothers team alongside Mike and Tim. Google Dean Belfield Just Giving to support him in this worthwhile endeavour. We also highly recommend Dean's technical blog, breakintoprogram.co.uk



» Magazine type-in listings like this were a gateway to games programming for many coders.

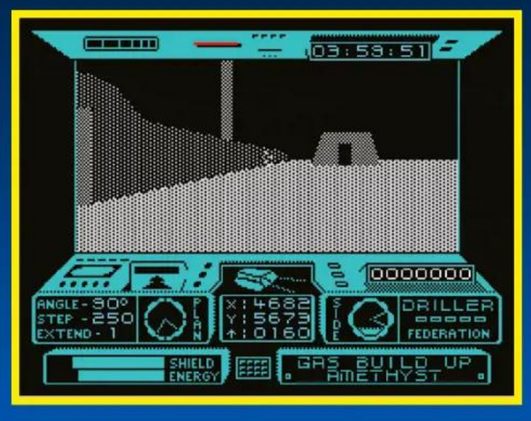
RETRO GAMER'S SEVEN FAVOURITE GAMES THAT PUSHED THE SPECTRUM TO ITS LIMITS

STARSTRIKE II

■ Wireframe games, like *Elite* and the original *Starstrike*, were always popular on the Spectrum. In 1986, the experts in the genre, Realtime, left fans and critics flummoxed with another space shooter, this time featuring filled-in 3D graphics. While not as fast as its predecessor, the visual impact was staggering.

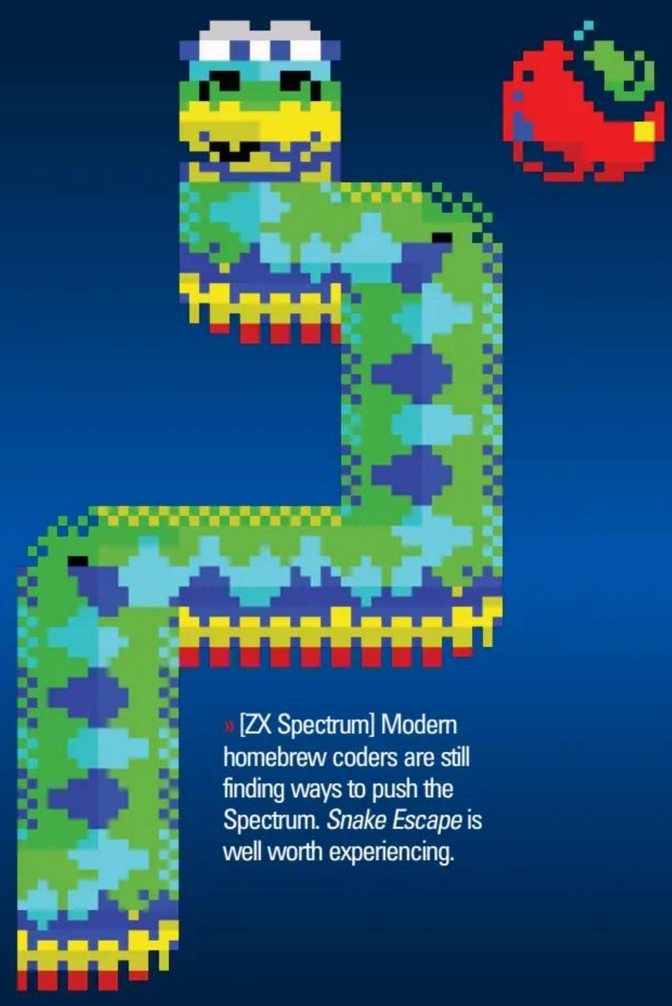
LIGHT FORCE

■ This shoot-'em-up, released in 1986, showed how much Spectrum developers had learned in a relatively short time. Given the cinematic sobriquet of Lasermation, *Light Force*'s technique moves eight pixels at a time, creating a box-like feel to its sprites but with zero attribute clash.



DRILLER

■ Like *Light Force*, *Driller* boasted a named system – Freescape, a blend of freedom and landscape – and overawed everybody on release. In truth, it moves far too slowly (understandably), but the achievement of creating a first-person free-roaming game on the Spectrum was incredible.



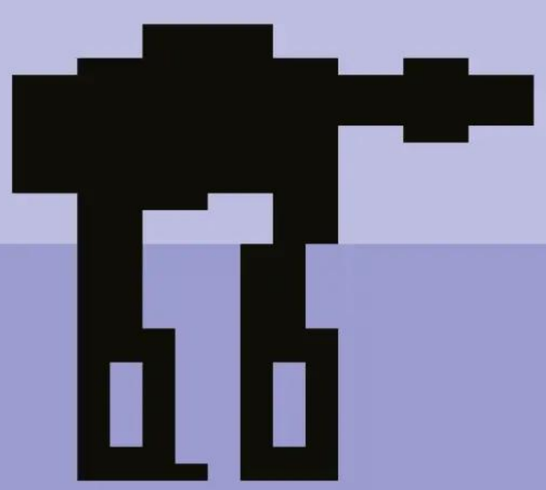
» [ZX Spectrum] Modern homebrew coders are still finding ways to push the Spectrum. *Snake Escape* is well worth experiencing.

THE RETRO GAMER GUIDE TO...

PARKER BROS

BY USING ITS CONTACTS IN THE ENTERTAINMENT SECTOR AND FORMIDABLE MARKETING CLOUT, **PARKER BROTHERS** BROUGHT TITLES LIKE STAR WARS: THE EMPIRE STRIKES BACK, SPIDER-MAN AND FROGGER TO THE ATARI 2600 AND ITS RIVALS. **RETRO GAMER** HIGHLIGHTS THE FIRM'S BEST RELEASES

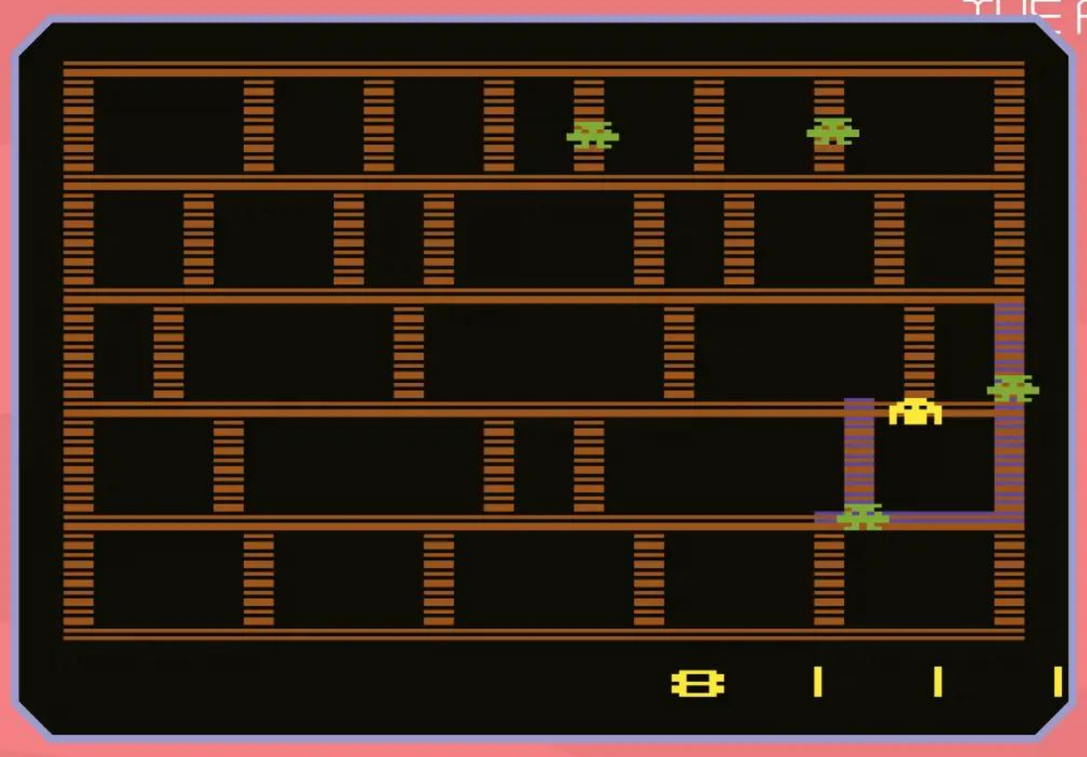
Words by Rory Milne



From its earliest releases onwards, Parker Brothers set its stall out as a producer of licence-based videogames. Parker started 1982 with convincing Atari 2600 adaptations of the hit Konami coin-ops *Amidar* and *Frogger*. Its other titles for the year included the hugely successful *Star Wars* shooter for the 2600 and Intellivision *The Empire Strikes Back*, and a popular videogame adaptation of *Spider-Man*.

1983 saw Parker bring Nintendo's arcade platformer *Popeye* to the Atari 2600 and a raft of other platforms, and in the same year the firm built on its earlier successes with arcade and *Star Wars* licensed titles. To this end, it published home versions of coin-ops such as Nintendo's twitch reaction-based *Sky Skipper*, Konami's side-scrolling helicopter shooter *Super Cobra* and Gottlieb's smash hit cube colourer *Q*bert*. On the *Star Wars* side, Parker brought *Star Wars: Jedi Arena* to the 2600 and *Return Of The Jedi: Death Star Battle* to a number of different systems. Parker then tweaked this proven approach during 1984. Its only *Star Wars* releases of the year were its highly successful ports of Atari's arcade game adaptation of the first movie, while other notable 1984 Parker titles included home versions of Konami's arcade shooter *Gyruss*, its home-exclusive sequel *Frogger II: ThreeeDeep!* and its original platformer *Montezuma's Revenge*.

Parker Brothers was then bought over and renamed in 1985, but before the sale it had one last hurrah in the form of Atari 2600 and ColecoVision adaptations of the coin-op sequel *Q*bert's Qubes*. *



AMIDAR 1982

ATARI 2600, VARIOUS

Surreal narratives in videogames were far from unusual in the early Eighties. In *Amidar*, we get some stages where gorillas are chased by warriors and others where paint rollers get harassed by pigs. Of course, there's a lot more to Parker's conversion of Konami's coin-op, starting with its playfield of interconnected rectangles, each of which your great ape or sentient decorating product is tasked with colouring in. In either protagonist's case, this is done by moving around the sides of each rectangle, all while avoiding the attentions of the aforementioned warriors and pigs. The snag here is that these opponents can move faster than the game's unlikely heroes, but a clever mechanic allows you to employ some strategy. When an enemy is moving towards you, as long as there's a corner between you and them then they will take that corner rather than continuing in a straight line, leaving you unharmed. Put another way, as long as you can keep putting right or left turns between you and your aggressors then you get left alone. A second, slightly cruder, defence allows you to temporarily turn your enemies into shadows, which lets you walk right through them. Last, but not least, when you've coloured in the last of the four corner rectangles on a stage your foes turn into chickens and the tables are turned, meaning that you can chase and catch them for points for a short while instead of fleeing from them. In terms of how Parker's Atari 2600 adaptation stacks up to the arcade original, there are some obvious concessions with its audio and visuals. There are very few sound effects and the music from the coin-op is missing, but in all honestly that can be quite grating. The 2600 version's graphics are less well defined than the arcade game's, but they do the job just as well. More importantly, the original's gameplay is all there, with the exception of its perfunctory bonus stages – and the chickens mentioned earlier are exclusive to Parker's home version!

FROGGER 1982

ATARI 2600, VARIOUS

With four million copies sold on the Atari 2600 alone, *Frogger* was by far the most successful videogame released by Parker Brothers. What's interesting about its popularity is that this wasn't dampened by the fact that there are so many ways for its amphibian hero to die. Poor Frogger has to first cross a ridiculously busy five-lane motorway on his way to a riverbank, where at times he has to avoid venomous snakes. He then has to cross a physics-defying river that somehow flows in opposite directions at the same time. The river's rapids mean that he can't swim across, so instead he has to hop onto a row of passing turtles, although these can dive at any time, leaving Frogger to drown if he doesn't quickly jump forwards onto a log floating in the other direction from the turtles. Hopping between further turtles, floating logs and even alligators – providing he avoids their snapping jaws, gives him a slim chance of reaching the far side of the river. That said, even when that's within touching distance he still has to beware of hungry alligators lurking in the reed beds he calls home. Unique to Parker's versions is a feature that allows Frogger to float off one side of the river and safely appear at the other side, although this is only in the easiest mode. Floating off-screen in the home versions' more difficult modes means instant death. On the bright side, rescuing lady frogs and munching flies found on Frogger's home bases gets you bonus points. ▶

STAR WARS: THE EMPIRE STRIKES BACK 1982

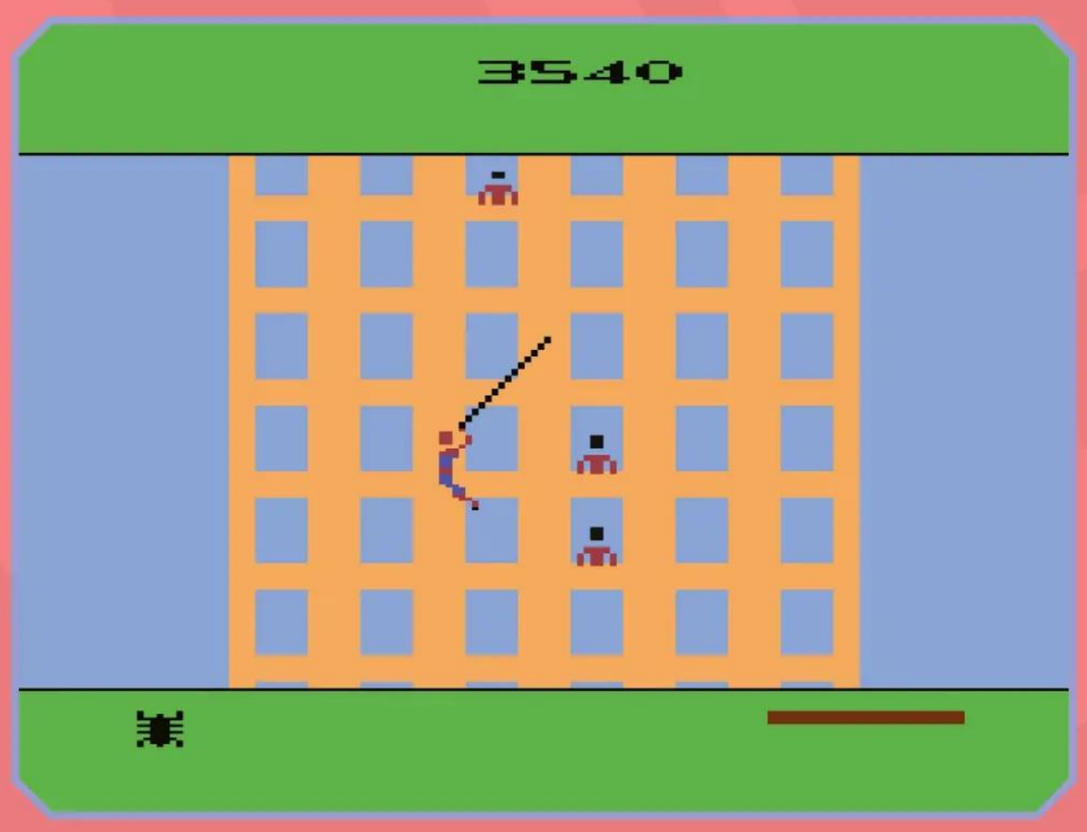
ATARI 2600, INTELLIVISION

■ Arguably, *Star Wars* was the hottest movie series of the late-Seventies and early Eighties. By 1981, when Parker Brothers made plans to enter the home videogames market, it already had a history of licensing the films for toys and board games. This meant that it had the contacts required to secure the rights to adapt the popular movies into a series of videogames, and its first attempt was *The Empire Strikes Back*. *Empire* puts you in the seat of Luke Skywalker's snowspeeder as he goes into the Battle Of Hoth. As in the movie, the objective is to take down gigantic AT-AT walkers, which somewhat resemble huge metal four-legged animals. As with so many arcade-inspired Eighties games, there is no way to actually win the battle, instead it's a high-score chase until your final breath. *Empire* is a side-scrolling shooter, where only shots to the AT-ATs' heads and torsos count. Multiple successful shots are indicated by the vast killing machines changing colour and then finally exploding. Alternatively, a single shot to a weak spot that occasionally appears on the AT-AT's shoulder will instantly dispatch them. Your speeder also changes hue as it takes damage from the AT-AT's return fire, although you can land and repair it at the cost of being defenceless while doing so. As you progress through the levels, things are made more difficult for you by the AT-ATs. They increase the speed that they march towards the rebel base, which of course is their objective, and is an action that ends the game. They can become impossible to fly alongside without taking damage, limiting you to either flying under or over them. The AT-AT's also launch smart bombs that follow you around the screen. You get rewarded with the Force for avoiding these for two minutes, which makes you invulnerable for 20 seconds. ▶

POPEYE 1983

ATARI 2600, VARIOUS

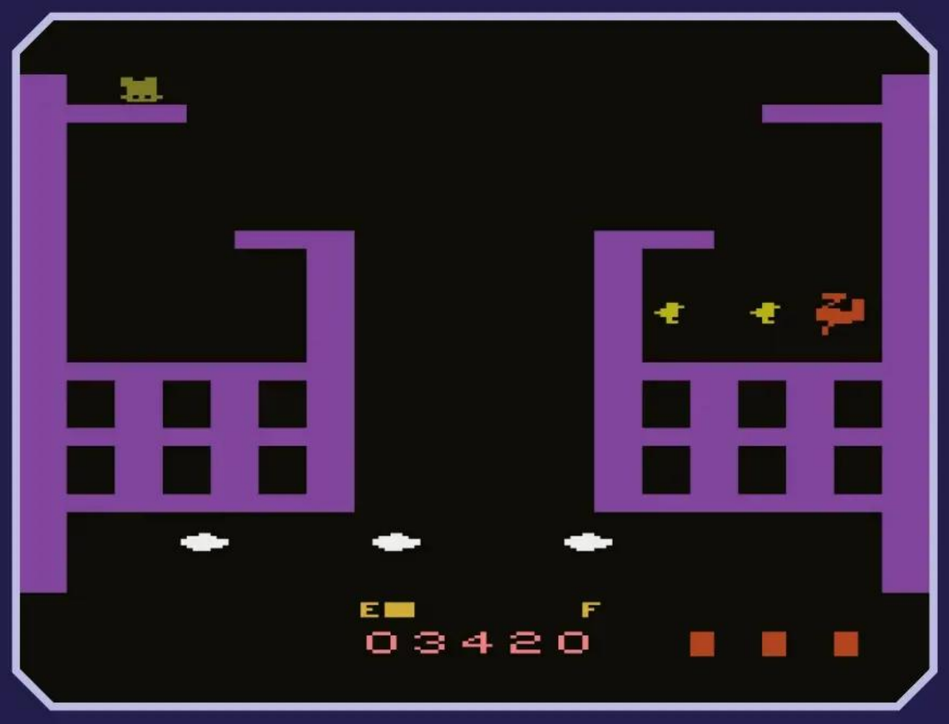
■ Considering that Shigeru Miyamoto's *Popeye* coin-op ran on then-cutting-edge hardware, Parker's home versions were always going to be a compromise. They do, however, ably adapt the majority of the arcade game's visuals, tunes and gameplay. The objective is to catch hearts, notes and letters dropped by Olive Oyl, which is made trickier by Popeye's rival Brutus attacking him and other foes chucking deadly projectiles at him. There's no platforming in the game's three stages, but there are steps to climb up and down levels, moving platforms, and see-saws that propel Popeye into the air. Of course, there's also spinach to collect that lets you turn the tables on Brutus.



SPIDER-MAN 1983

ATARI 2600, ODYSSEY 2

■ The Parker Brothers *Spider-Man* game has the Marvel hero scaling the Empire State Building, the lower levels of which are occupied by the Green Goblin's henchmen. You apprehend these foes by swinging into them, but if Spidey's web comes into contact with one of them then they cut it, leaving him to fall to his death. However, you can always spin another, and providing it snags the wall of the building then he's free to fight on. The greater objective is to reach the top of the New York landmark using limited webbing, where the Goblin has planted bombs that you need to defuse. After working your way past him and on to the top of the building, you find a Super-Bomb. Stop this from exploding and it's on to the next stage. There are several of these, and as you progress the Empire State Building inexplicably gets taller, the Green Goblin makes more appearances per level and you're given less web fluid.



SKY SKIPPER 1983

ATARI 2600

Based on an obscure Nintendo arcade game, Parker's Atari 2600 conversion of *Sky Skipper* is more of an adaptation than a faithful copy. As with the coin-op, the 2600 title has gorilla guards that you have to bomb, which as well as stunning them releases trapped animals from cages. You have to rescue these using a biplane, which isn't as easy as it sounds, as any contact with the walls next to the cage doors proves fatal. Additionally, the creatures you're trying to rescue get returned to their cages as soon as their gorilla guard comes to, which means you have to knock him out again before launching another rescue attempt. You have to do all of this while avoiding deadly clouds and trying not to run out of fuel, and unlike the coin-op there's no refuelling. To balance this out, the gorillas in the 2600 version don't run and jump around the screen or throw projectiles at you. In terms of level design differences, the original has fairly wide open stages, whereas the Parker Brothers adaptation makes a feature of having to negotiate tight spaces and turn your biplane on a dime to avoid crashing into things.

SUPER COBRA 1983

ATARI 2600, VARIOUS

Konami's spiritual successor to *Scramble* is slightly less well known than the game that it took its inspiration from, but thanks to Parker's *Super Cobra* conversions, the side-scrolling semi-sequel has a much higher profile than it might have had otherwise. The extent to which the coin-op is accurately replicated by Parker's home versions depends greatly on the differing capabilities of the systems it was adapted for, but each version delivers the core gameplay of the arcade original. *Super Cobra* challenges you to navigate a heavily armed helicopter past the stalagmites and stalactites of a treacherously confined cave system, all while trading bombs and bullets with enemies. Their assault involves dropping mines from the cave roofs, firing rockets and artillery at you from the cave floors and sending fireballs flying at you from all directions. You start with limited fuel to complete your 11-level mission, and in a rather counterintuitive move, you have to blow up fuel tanks to replenish your precious supply.

Q*BERT 1983

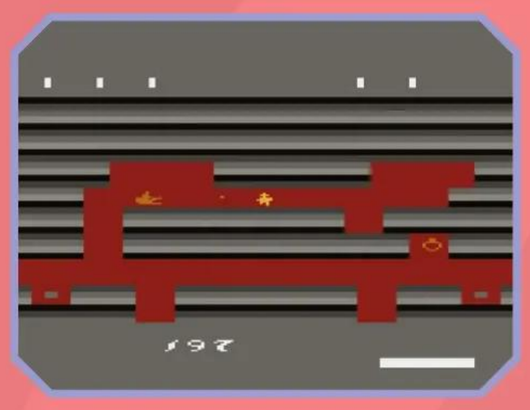
ATARI 2600, VARIOUS

For its time, Gottlieb's coin-op *Q*bert* had beautifully rendered high-resolution graphics, and those were never going to be perfectly replicated on the home systems of the day. With that said, Parker's home adaptations still capture the essence of the arcade game they're based on. For those that don't know, Q*bert's mission is to hop around a pyramid built of isometric cubes, changing the colour of their top sides while avoiding snakes, bouncing balls and other oddities, and occasionally freezing them with power-ups. You have escape routes in the form of two single-use spinning disks, which fly the hero to the top of the pyramid and out of the way of immediate danger. Parker's 2600 version has far less detailed visuals than the arcade game, a few less cubes for its protagonist to colour and lacks the coin-op's gravity-defying foes Ugg and Wrongway, but in all other respects it nails the feel of the arcade original. Parker's adaptations for more capable systems play equally well and have better graphics, and they reinstate the cubes and characters missing from their 2600 counterpart.

REACTOR 1983

ATARI 2600

As with the Gottlieb coin-op, the fixed-screen playfield in Parker's conversion has an expanding nuclear core at its centre and a deadly wall that contains it. You have to manoeuvre your craft within the gap between the two, avoiding the wall and in later levels the unshielded core. This is made all the more difficult by particles that try to bounce you into these hazards, and your best defence is to bounce them into oblivion first. Your greater goal is to make them collide with two sets of control rods mounted to the wall. Destroying one set temporarily shrinks the core, destroying both sets reduces it too, but this additionally gives you an extra decoy. A decoy can be deployed in key positions where particles will bounce off it instead of your craft until it burns out. There are also chambers that you can knock particles into for bonus points. To Parker's credit, the 2600 *Reactor* faithfully replicates the coin-op's gameplay. It plays part of its title tune between reactor shutdowns too. Its one failing is that its graphics look quite basic compared to the arcade original. ▶



TUTANKHAM 1983

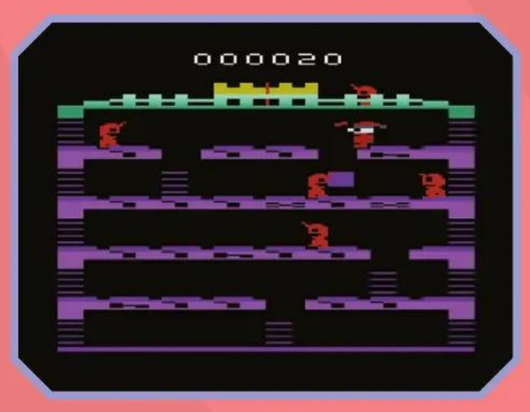
ATARI 2600, VARIOUS

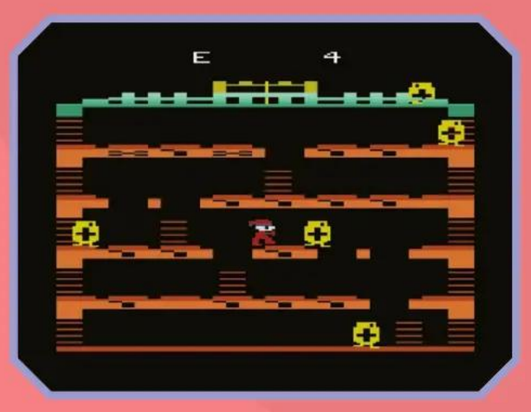
Konami's maze shooter can be seen as a one-player predecessor to *Gauntlet*, although its enemy generators only produce small numbers of foes and aren't destructible. As with *Gauntlet*, you collect keys that unlock exits, and use teleports to reach certain sections of the levels. Parker's Intellivision, ColecoVision and VIC-20 adaptations are quite faithful to the coin-op, but with less impressive aesthetics. Its challenging Atari 2600 version is more like an interpretation that scrolls vertically instead of horizontally. It also limits its generators to hatching one foe at a time, and its more confined mazes typically have just one route through them, with detours to search for treasure and keys.

STAR WARS: JEDI ARENA 1983

ATARI 2600

Based on Luke Skywalker's training session in the original *Star Wars* movie, Jedi Arena tasks you with deflecting laser blasts fired from a hovering drone. To spice things up, a second Jedi stands opposite you, directing the drone's lasers at you as you do the same to them. When either of you is hit your shields are depleted. The aim of the game is to still have some shield left at the point that your opponent loses the last remnants of theirs. You then just need a direct hit to your rival to win a point, and then two more points to win the game.





MR DO!'S CASTLE 1984

ATARI 2600, VARIOUS

Parker's platforms and ladders-based coin-op conversion has Mr Do dodging angry unicorns while dislodging blocks onto their heads with his hammer! This is best done after trapping them in holes, as it's harder to hit a moving target. As well as flattening unicorns, bashing blocks gets you cherries and keys, and by taking three keys to the top level your hammer temporarily becomes lethal. Of all Parker's conversions, the Atari 2600 adaptation resembles the coin-op the least, but it deserves special mention for its in-game music and implementation of the original's mechanics on far less capable hardware.

STAR WARS: RETURN OF THE JEDI: DEATH STAR BATTLE 1983

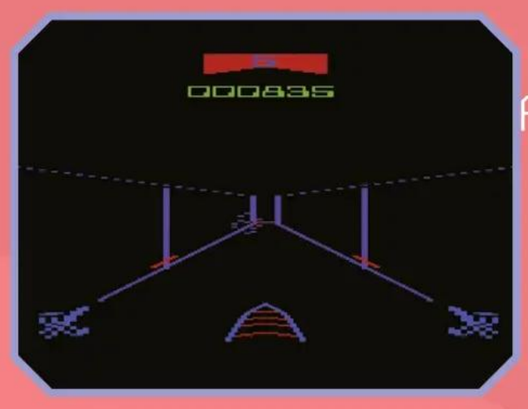
ATARI 2600, VARIOUS

Another Parker Brothers *Star Wars* original, *Death Star Battle* has you piloting the Millennium Falcon on a mission to destroy a series of Death Stars. The game's first stage has you picking off ships from the Empire's fleet while you wait for an opening to appear in a deadly forcefield. Passing through an opening takes you to within firing distance of a Death Star, which is defended by more of the Empire's forces. The Death Star also defends itself with the mother of all laser beams. Your objective is to shoot a path through the Death Star to its reactor. Once targeted, the reactor triggers an explosion that you have to avoid the fallout from before starting a new mission on the outskirts of another Death Star's forcefield.

GYRUSS 1984

ATARI 2600, VARIOUS

The Atari 2600 *Gyruss* has no right to look or sound as good as it does, but by playing to the system's strengths Parker Brothers produced a shooter that's a thing of beauty in spite of only vaguely resembling Konami's hit coin-op. Its enemy craft may not look that special in static screenshots, but they're far more impressive in full motion. Rather than trying to adjust for the flicker that occurs when more ships are on-screen than the 2600 is capable of displaying, Parker instead opted to use that flickering to make the enemy craft appear to shimmer. This clever visual effect is achieved by cycling the colours of the ships between bright and dark shades of the hue they're rendered in. The 2600 *Gyruss* has an equally accomplished in-game soundtrack; it's one of the best examples of 2600 music out there. Of course, all of this aesthetic splendour would count for nothing if the gameplay wasn't there, but thankfully the 2600 version of *Gyruss* is fast and furious, especially on the harder difficulty settings. So much so that it makes Parker's adaptations for more powerful systems seem tame by comparison. For those unfamiliar with *Gyruss*, it tasks you with dispatching waves of spaceships that attack in tight circular formations as you travel between planets. You circle around your foes at a higher altitude, with the challenge being to rotate left and right in order to place them in your sights without being hit by their return fire.



STAR WARS: THE ARCADE GAME 1984

ATARI 2600, VARIOUS

Like the Atari coin-op, the Parker home conversions are short but sweet in terms of their challenge. The action starts with a dog fight between Luke Skywalker's X-wing and the Empire's TIE fighters, which blast fireballs at the hero's ship. This works far better than if they were firing lasers like in the movies, as it gives you some target practice and is more visually impressive, even on the lowly Atari 2600. Next up is a series of laser towers that have to be disarmed with your lasers, and finally there's the famous trench run from the first movie, which on successive runs introduces fireballs and obstacles for you to blast or avoid. Parker's 2600 version adapts the arcade game's vector graphics and multiple stages quite well, although it's far blockier and has less going on on-screen. The firm's ColecoVision, C64, Atari 5200 and Atari 8-bit conversions look and play more like the coin-op than the 2600 port, but they suffer from slowdown at times.

FROGGER II: THREEEDEEP! 1984

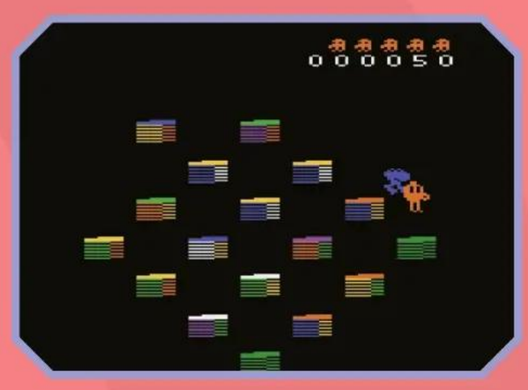
ATARI 2600, VARIOUS

In the first environment of Parker's home exclusive, Frogger swims underwater from the foot of the screen to the top, dodging fish, eels and submarines as he goes. The far shore has bays he has to slot into and there are more on each successive level. The second section has him hopping between rows of floating debris and swimming creatures on his way up the screen towards life preservers. Finally, a third section tasks him with jumping upwards to bays in the clouds using birds and zeppelins for transport. There are edible, helpful and deadly animals to look out for, and an overall goal of filling the bays in each stage's environments in order to advance to more challenging levels.

MONTEZUMA'S REVENGE 1984

ATARI 2600, VARIOUS

A rarity among Parker Brothers videogames, *Montezuma's Revenge* is an original title with absolutely no ties to a licence. It's essentially a platformer, in that there's leaping from surface to surface and shimmying up and down ropes, but far more often you find yourself climbing up and down ladders. For this reason, *Montezuma's* feels a little like *Pitfall!*, and its treasure collecting, creepy crawly opponents and timed challenges reinforce this thought. Parker's title deserves credit for incorporating adventure game elements, such as searching for keys to open doors and navigating pitch dark rooms. The Atari 2600 version has fewer levels than the Atari 8-bit original, but it's still one of the system's best action adventure titles.



Q*BERT'S QUBES 1985

ATARI 2600, COLECOVISION

Released at the beginning of the year that Parker Brothers was sold and renamed, *Q*bert's Qubes* is based on the coin-op of the same name, and is similar to the original *Q*bert*. Besides new villains, the main difference is that hopping on the cubes now spins them 90-degrees instead of colouring their top face. The sides of each cube are different colours, and you have a target cube that you have to spin a row of cubes to match. Once you pull that off then it's on to the next level. Parker only released Atari 2600 and ColecoVision conversions, but both are faithful adaptations and are worthy swan songs for the firm. ✱

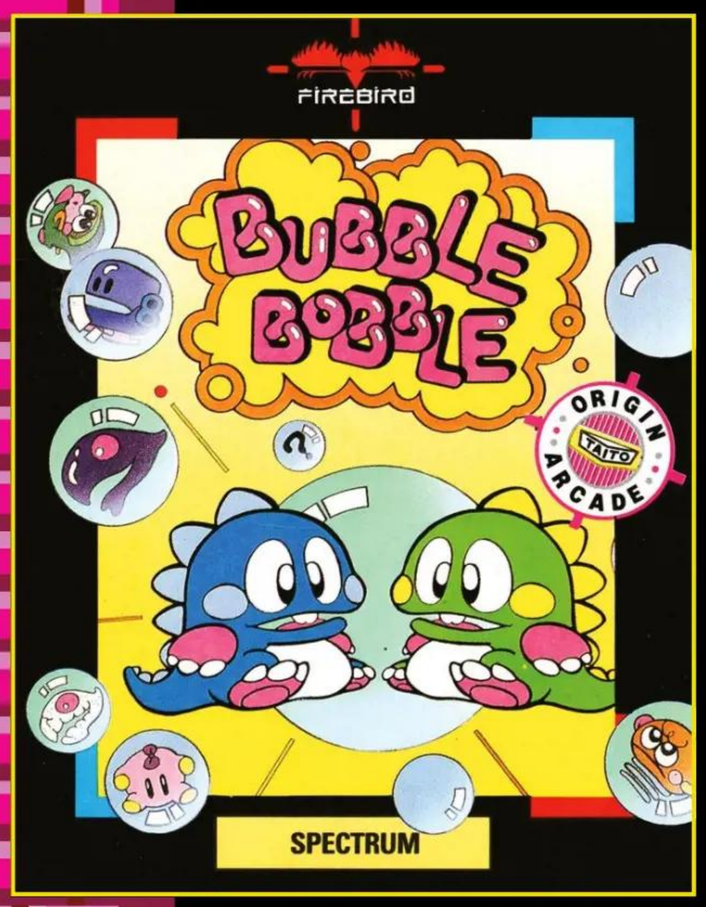
LIVELY LICENCES

TOP PARKER BROTHERS GAMES BASED ON TOYS AND MOVIES

In the US during the Eighties, GI Joe and Strawberry Shortcake were incredibly popular toys, and *James Bond* movies were almost as popular as *Star Wars*. With this in mind, it's hardly surprising that Parker Brothers secured the rights to make licensed videogames based on all three properties. *GI Joe: Cobra Strike* (left image) is a single-screen shooter with twin objectives. Firstly, you have to protect military trainees from a giant laser-spitting snake using a movable shield, and secondly you have to target the snake with a cannon, or with two cannons in the two-player mode. *Strawberry Shortcake: Musical Match-Ups* is a puzzle game, where you have to unscramble Strawberry Shortcake characters against the clock using knowledge of the toys or going by their colour-coordinated looks. Lastly, *James Bond 007* (right image) is a side-scrolling action title where you shoot diamonds to collect them, avoid laser satellites and robot divers, and leap over oil rigs in boats – to name but a few of the game's challenges. As with all Parker videogames, these three have excellent presentation and compelling gameplay.

LET US JOURNEY INTO THE DEADLY CAVE OF MONSTERS ONE MORE TIME AS RETRO GAMER PRESENTS THE ULTIMATE GUIDE TO TAITO'S MARVELLOUS BUBBLE-BLOWING EXTRAVAGANZA. CUE THE MUSIC...

WORDS BY GRAEME MASON



» Practically all the home conversions of *Bubble Bobble* are excellent.

Despite being responsible for the coin-op videogame that helped instigate the arcade revolution – *Space Invaders*, in case you were wondering – Taito was struggling by the mid-Eighties. A string of below-par or ill-received games had diluted the company's reputation, and it desperately needed a hit. Then, in 1986, thanks to newly joined designer Fukio Mitsuji, it got one, complete with a twisty denouement that even M Night Shyamalan would be proud of.

Bubble Bobble is the tale of two squat and cuddly dragons named Bub and Bob. Bub and Bob happily enjoy life with their puzzlingly human-like girlfriends when Baron Von Blubba kidnaps the lasses, ferreting them to the deepest, furthest grotto in the Cave Of Monsters. The scaly pair have no choice but to venture into the caverns, each infested, as the name suggests, with Baron Von Blubba's monstrous henchmen. An alternative plotline involves the girls wandering into a magical forest and stumbling into the Cave Of Monsters, whereupon they encounter Super Drunk, with the same result.

> "[BUBBLE BOBBLE] WAS SOFTWARE CREATIONS' FIRST MULTI-PLATFORM LICENCE"
> MIKE FOLLIN

Bub and Bob can jump and – yes! – blow bubbles. Should a bubble come in contact with an enemy monster, it encases them, instantly negating their mass and causing them to float helplessly around the screen. Left alone, eventually, the monsters escape their translucent prison; however, the dragons can pierce the bubbles (with either their pointy back scales or by jumping on them), sending the enemy spinning across the level. Once the pair have eliminated all the monsters, it's on

MASTER OF BUBBLES

RETRO GAMER'S TIPS TO HELP THOSE LOVEABLE HEROES AGAINST BUBBLE BOBBLE'S BATTERY OF MONSTERS

BUBBLE BOUNCING

Bub and Bob can use their bubbles to bounce to higher parts of the screen. As they progress through the Cave Of Monsters, this becomes a vital skill with more otherwise inaccessible areas, such as the question mark of level 36.

EXTEND YOUR LIFE

Watch out for the Letter Bubbles that drift around some stages. Collecting a letter transfers it to the side of the screen (depending on whether it's Bub or Bob) – catch them all, and the dragon gets a valuable extra life and flies off to the next screen.

RAPID FIRE

Dragon buff items appear when certain conditions are met. Our favourite is the yellow sweet: gather this treat up, and the brother gains rapid-fire bubbles, useful for the ever-increasing pack of monsters. Jump 35 times to cause it to appear.

SECRET ROOM

Completing *Bubble Bobble* with the Good Ending helps unlock Super Bubble Bobble mode. Providing the player doesn't lose a life, levels 20, 30 and 40 now contain doors to secret rooms full of items. Gather them all up for a sweet score bonus.

to the next screen, until a showdown with the game's humongous final boss, Super Drunk. Defeat him, and Bub and Bob are reunited with their girls. Ahhhh.

In the finest arcade gaming tradition, *Bubble Bobble* begins simply, with three platforms and a sprinkling of the easiest enemy, the mechanical Zen-Chan. However, as Bub and Bob progress, the enemies get tougher and meaner, and the levels become devilishly arranged, with inescapable gullies and multiple bubble-blocking platforms. Of the former, the ghostly Maita hurls rocks at the heroes while Monstas haphazardly zip around the screens. Pulpuls hover around thanks to their head-based rotors and the manic Banebous jump on their coiled springs. Latterly, the players will encounter the furry Hidegons and Invaders (harking back to Taito's biggest hit), and should Bub and Bob dawdle too long, they'll be hunted down by the dreaded Skel-Monster – sometimes referenced as Baron Von Blubba himself – an invincible monster preceded by the warning, "Hurry Up!" At this point, the regular enemies turn crimson in anger, and move faster around the screen. As

» [Arcade] Drunks can be troublesome in packs.

» [Arcade] Bub and Bob stand by as an explosion rocks stage 41.

PLAY TODAY

LOOKING FOR A BIT OF BUB AND BOB ACTION? HERE'S HOW YOU CAN PLAY BUBBLE BOBBLE TODAY

Bubble Bobble remains as popular today as it was almost 40 years ago. As a consequence, there are multiple ways to enjoy the Taito classic. Hyper Mega Tech!'s *Super Pocket Taito Edition* (far below) handheld frontlines *Bubble Bobble*, while Numskull offers a beautiful *Bubble Bobble* quarter size arcade cabinet. Fans can play both *Bubble Bobble* and *Rainbow Islands* with the Nintendo Switch compilation Taito Milestones 3 or download the original from the Nintendo eShop. The original game comes bundled with the 2019 PlayStation 4/ Switch game *Bubble Bobble 4 Friends*, and you can also stream the game on the retro streaming service Antstream Arcade (below). Basically, there's no excuse not to play *Bubble Bobble* – even in 2025.

» [Arcade] Collect all six EXTEND Bubbles, and the player gains an extra life and this colourful reward.

MAITA

TRAPPED ZEN-CHAN

» [Arcade] Collecting bottles of Holy Water populates the current screen with bonus items.

BOB

BUB

always, one touch from an enemy and the player loses a life.

As the name suggests, the final boss, Super Drunk, is a superior version of the standard Drunk, but more on him in a bit. All enemies drop an item when vanquished, yielding a score bonus, and special bubbles float around some levels, housing either fire, fountains of water or lightning bolts. Jumping on these releases the element, killing any enemy in its path. Rumour has it there's a special bubble that bestows the lucky dragon with fireballs for bubbles, and Bub and Bob can jump on all bubbles, gaining access to otherwise unreachable areas.

Along with the enemies, *Bubble Bobble*'s platform structure is also deviously designed. Fortunately, the two cute dragons have some help. Magical items will appear throughout each stage, each granting either a score bonus or helpful abilities. Let's take the ability-based items first. The Red Shoe increases player speed [Doesn't take you back to Kansas? – Ed], and appears after Bub or Bob walks a certain distance, while Pink, Blue, and Yellow Candies extend bubble-blowing distance, increase bubble speed and the bubble firing rate, respectively.

There are also many environment and enemy-related items. The Clock freezes enemies, and Dynamite destroys all on-screen enemies. Parasols thrust the players forward a set handful of levels, depending on their colour, and appear after Bub and Bob pop a given number of Water Bubbles. Holy Water Bottles are another prize, turning the current screen into a bonus stage when collected, the monsters disappearing, and the level filling up with a colour-specific bonus item. For example, acquiring the yellow bottle populates the screen with rainbows, an apt foreshadowing of *Bubble Bobble*'s sequel. Rings give the player action-related points bonuses, while the Lamps wrap up collections of bonuses into short, one-stage power boosts. Perhaps the items players covet the most, however, are the Crosses, the blue Cross Of Water flooding the screen (fortunately, dragons can breathe underwater), the yellow Cross Of Thunder firing a massive lightning bolt, and the

» [Arcade] The final boss, Super Drunk, must be zapped with special Lightning Bubbles.

"THE FIRST DIFFICULT THING WAS TO GET SO MANY SPRITES ON THE SCREEN"

MIKE FOLLIN

CONVERSION CAPERS

C64

Quite simply, one of the C64's greatest arcade conversions and a playable marvel from Software Creations' Ste Ruddy and Andrew Threlfall. *Bubble Bobble* is also one of the best simultaneous two-player experiences on the computer, while the only downside is the twee and annoying music.

AMIGA

Another masterful home port of *Bubble Bobble* from Software Creations. The lovely music from David Whittaker is an Amiga-exclusive bonus, and the arcade game's sheer playability is perfectly recreated. Includes all levels and the EXTEND bubble bonus scheme. One of the Amiga's finest arcade conversions.

AMSTRAD CPC

While lagging behind the C64 game in terms of visuals, this Amstrad port from Software Creations and Firebird is still an entertaining and smooth experience. Sadly, it lacks the speed of its fellow 8-bit games and is probably the weakest of its peers in terms of gameplay.

ATARI ST

Almost identical to the Commodore Amiga game, this is another highly impressive take on Taito's classic bubble-bursting arcade game. It loses a little sonically, but that's perhaps unfair considering the high quality of the Amiga audio. However, Atari ST owners could not really complain about this rather fine arcade conversion.

MSX2

Another great home conversion of *Bubble Bobble*, which is maybe to be expected given it's developed by Taito itself. Released only in Japan and on cartridge, it's visually spot-on and plays brilliantly, too. Developer Clover released an unofficial MSX conversion three years later.

DEVELOPER Q&A

RETRO GAMER VENTURES INTO THE CAVE OF MONSTERS WITH MIKE FOLLIN OF SOFTWARE CREATIONS, AUTHOR OF THE EXCELLENT ZX SPECTRUM CONVERSION

Were you familiar with *Bubble Bobble*, and how did you come to work on the Spectrum game?
I hadn't seen it previously, despite spending a lot of time in the arcades! It was Software Creations' first multi-platform licence. I'd just done the Spectrum version of *The Sentinel* – and managed to not mess it up – so I was invited to go to work at its Manchester office.

With whom else did you work?
The 'Bubble' team had Ste Ruddy doing the C64 version and Andrew Threlfall doing the graphics. Dave Broadhurst joined us a while later to do the Atari ST and Amiga versions. Music was done out of house by someone Ste knew, and my brother Tim, of course.

Did you have an arcade machine to work from?
Yes, we had a machine in the office and spent many fun hours on it every day. That's how we learned all about the game, from playing it.

Was this your first arcade conversion?
It was my first 'official' arcade game. But in fact, I'd programmed several games at this point with various 'homages' to assorted arcade games. In some ways, it was more challenging to do an arcade game because everyone could compare it to the original. It didn't require the same kind of imaginative input, but it still allowed you to be creative in how you implemented the game.

Was *Bubble Bobble* a tricky project?
The first difficult thing was to get so many sprites on the screen. Then, late in development, we got some information from Taito, which had diagrams of how the bubbles were meant to move around for each of the 100 screens. That was too much memory at that point, so the only way to do it was to reduce the number of levels. Not many people got to level 80 anyway!

What did you think of your brother's work on *Bubble Bobble*'s audio?
Tim had previously worked on one-bit sound for the Spectrum – composing and coding in assembly language. *Bubble Bobble* was his first attempt at a chiptune. At first, he just copied the music exactly from the arcade game, thinking that was what was expected. It was then suggested that he did more with it, not altering the composition but making the notes sound more 'interesting'. Tim was more than up to that challenge and was soon developing music drivers with vibrato, tremolo, and full ADSR control.

What was it like getting a Crash Smash?
Getting a Crash Smash was always an honour – they knew what they were doing. That was my third one, but I'd also done three or four games that deservedly didn't get a Smash. I think *Bubble Bobble* stands up today because it was a reasonable conversion of a great game.

LIGHTNING BUBBLE

THE BEST HOME VERSIONS OF TAITO'S CLASSIC BUBBLE-BLOWING PLATFORMER

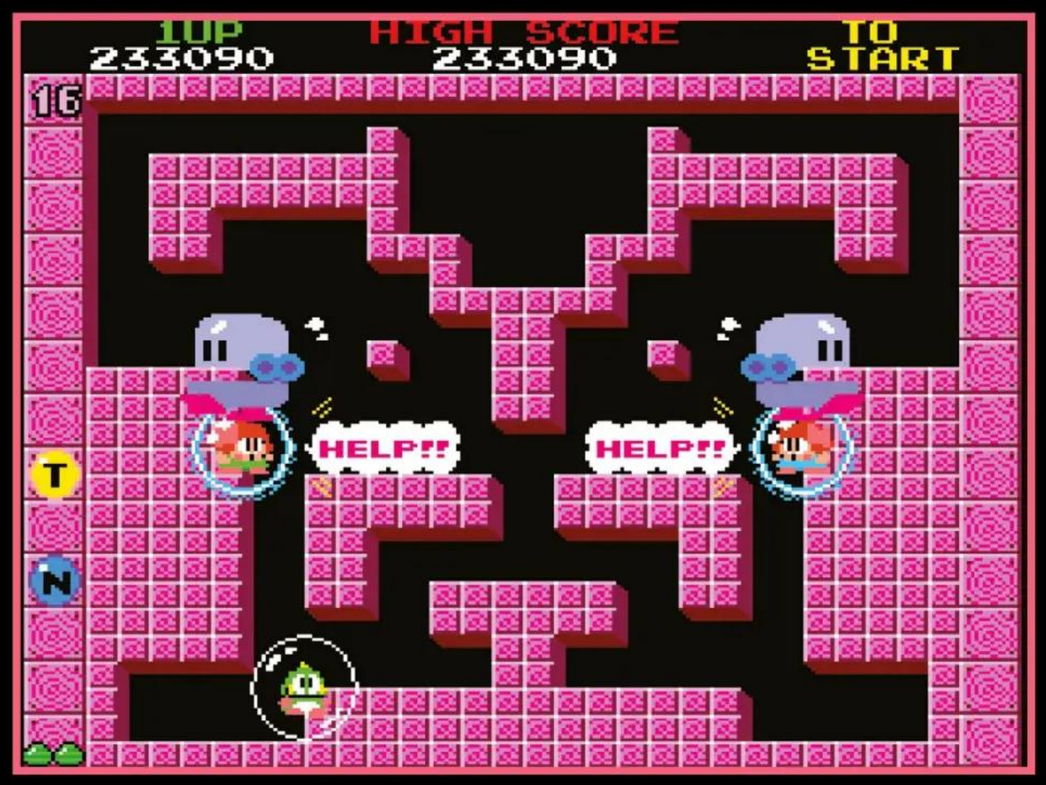
NES
Taito was on hand again to provide the NES home port. It's the most varied of the 8-bit versions, with some alternate level structure and a passcode system that enables players to jump straight back to the level their game ended on. Graphically, it struggles at times, but it's still a great two-player game.

APPLE II
Ugly, hard to play and utterly charmless, this Apple II interpretation is sadly rock bottom of all the home *Bubble Bobble*s. Of historical note, it was the first game developed by NovaLogic, which would go on to have much greater success with its range of PC flight sims.

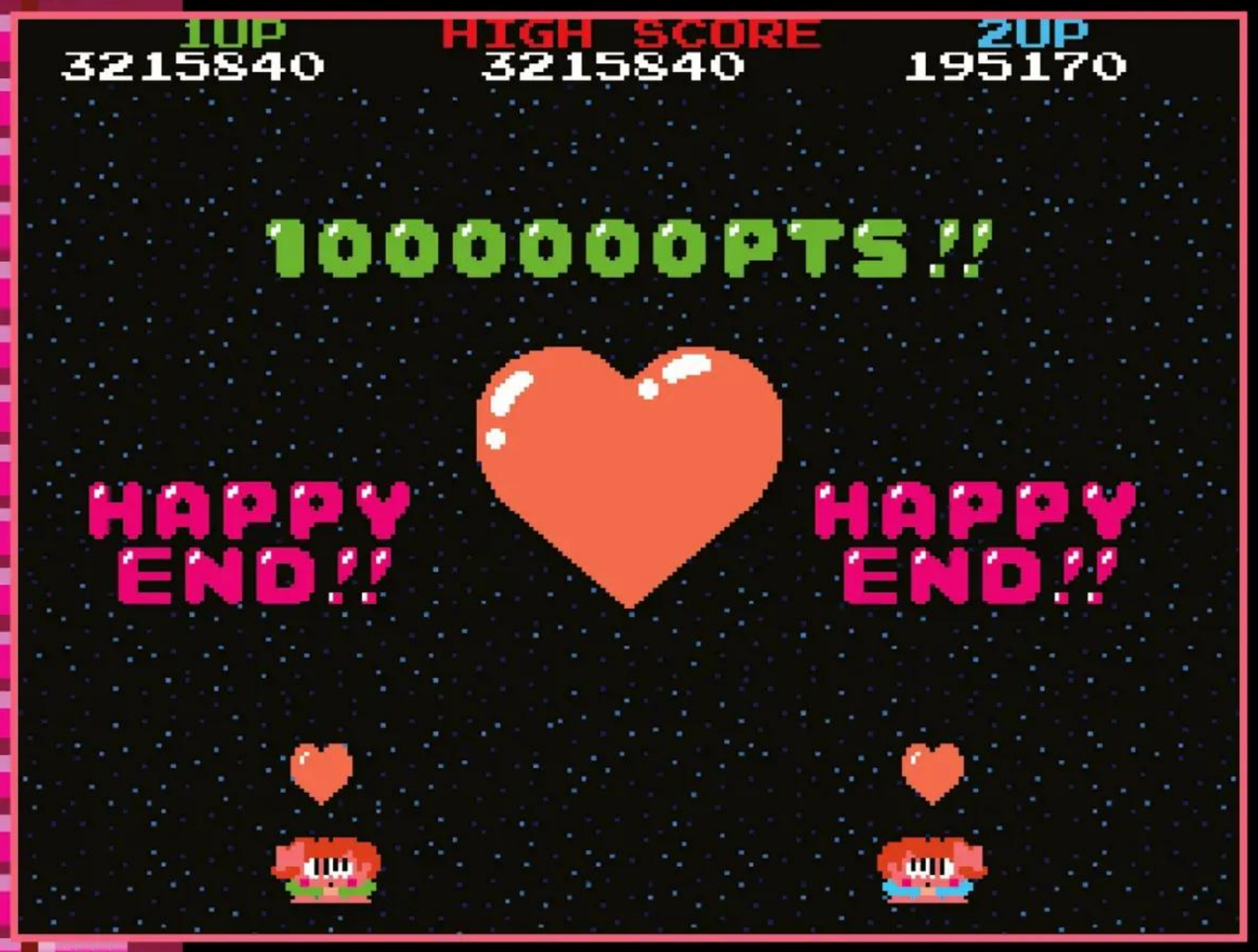
PC
American developer and publisher NovaLogic did a much better job with its PC iteration of *Bubble Bobble*. The sprites and display are solid, and it even includes a high-score table. It's let down a touch with its shrill tune; otherwise, this is another slick and enjoyable game.

GAME GEAR
Despite its cramped screen display, the Game Gear version (complete with the slower gameplay of Master System *Bubble Bobble*) is a pure wonder, and it's one of the handheld's premier games full stop. Yes, there are sacrifices – but it's still a delight to play.

ZX SPECTRUM
Visually, the Spectrum game is miles behind its peers – poor Bub and Bob have become ghostlike figures – yet it nails the playability and feel of the arcade game. There are only 80 levels, however: even the supreme talents of programmer Mike Follin couldn't quite squeeze it all into 48K. 128K owners, however, got some lovely Tim Follin tunes.



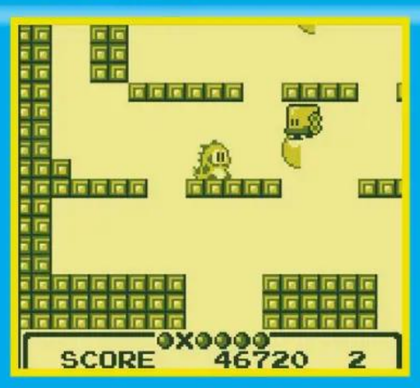
» [Arcade] Zen-Chans occasionally zoom by with the brothers' girlfriends in tow.



» [Arcade] In *Bubble Bobble*'s Good Ending, the brothers are reunited with their girlfriends.

» [Arcade] Later levels house devious platform structures.

"MAGICAL ITEMS WILL APPEAR THROUGHOUT EACH STAGE, EACH GRANTING EITHER A SCORE BONUS OR HELPFUL ABILITIES"



GAME BOY

Released in 1990, the first handheld version of *Bubble Bobble* is one-player only. It also adds a brand-new plot: Bob is ill, and only Super Drunk Jr's Moon Water can save him. While its scrolling can cause gameplay issues, it's another beautifully charming game from Taito.

GBA

Subtitled *Old & New*, the original version is included here alongside a 'new' game, which is essentially *Bubble Bobble* with fresh sprites, backgrounds and music. Both versions have the same scrolling issue of the earlier Game Boy games, slightly hampering the fundamental joy of *Bubble Bobble*.

SHARP X68000

This is an incredible release: not only does it contain a practically arcade-perfect port of *Bubble Bobble*, but there's also a new hidden game squirrelled away, too. A riff on Fukio Mitsuji's later game, *Syvalion*, *Sybubblun* is a small but horrendously difficult mix of the two games.

PLAYSTATION

Once you get past the corny intro sequences, this, as you'd expect over ten years later, is arcade-perfect. It has also been marginally aesthetically modernised and comes with the sequel, *Rainbow Islands*. It was also released on PC and Sega Saturn, which are identical to the PlayStation version.

MASTER SYSTEM

Known as *Final Bubble Bobble* in Japan, this Sega game expands upon the original but differently from the NES. It plays slower (including the oddly serene music) and now has 200 levels. Whether you consider that a bonus or not depends on how much you love *Bubble Bobble*…

red Cross Of Fire enabling the player's dragon to spit a limited amount of fireballs instead of bubbles. *Bubble Bobble* has many more effect items for the diminutive dragons to discover.

As with most arcade games, scoring is a key part of *Bubble Bobble*, and there are plenty of opportunities for the bubble-blowing duo to boost their tally. Each burst bubble accrues ten points while despatching a monster scores 1,000 points, in addition to its dropped bonus item. These range from lowly food items such as Oranges (400 points) and Bananas (500 points) to the higher-value Crowns, Jewels and Crystals, most of which appear upon the players meeting specific conditions such as completing the previous stage within a particular time. Players can also gain an extra life by collecting the EXTEND bubbles that drift around with the level's air current, and completing the sequence also incites an automatic jump to the next screen.

A world away from the sci-fi shoot-'em-ups and fighting games that dominated the arcades of the mid-Eighties, *Bubble Bobble* was a breath of fresh air. While superficially an uncomplicated game, the wealth of background criteria for some items and abilities endeared it to expert arcade gamers determined to discover the secrets of Taito's game. Perhaps the biggest of these is *Bubble Bobble*'s alternate endings. Complete the game as just a lone dragon gets you the so-called Bad Ending, with only Bub's girlfriend freed from her bubble prison. The Good Ending results from both dragons crossing the finishing line, while only the most skilled players can achieve the True Ending. Securing the Good Ending unlocks Super Mode – albeit after a predetermined series of joystick and button presses – and the subsequent True Ending, with both Bub and Bob's girlfriends and their parents freed from imprisonment. Playing in Super Mode also reveals a series of doors on the 20th, 30th and 40th levels, providing the players don't lose a life. These take the brothers to a secret room crammed with bonus items to collect.

While not totally original – Taito's own *Chack'n Pop*, an arcade game with many similarities, precedes it – *Bubble Bobble*'s broad appeal secured it great success in the mid-Eighties, a time of fierce competition in arcades. This success has led to an astonishingly enduring appeal, with sequels, spin-offs, and more appearing consistently until the present day. And who would have guessed that [SPOILER ALERT – Ed] those cute dragons were actually two humans named Bubby and Bobby?

FOREVER BLOWING BUBBLES

RETRO GAMER LOOKS AT SOME OF BUBBLE BOBBLE'S MOST MEMORABLE SEQUELS AND SPIN-OFFS

RAINBOW ISLANDS: THE STORY OF BUBBLE BOBBLE 2

Taito quickly released its arcade follow-up to *Bubble Bobble* and resisted the temptation to follow a similar gameplay style. Now in human form, Bub (or Bob, as *Rainbow Islands* is an alternate two-player game) throws deadly rainbows as he rises up each level and attempts to defeat the nefarious Dark Shadow.

PARASOL STARS: THE STORY OF BUBBLE BOBBLE III

Planned for the PC Engine by Taito, *Parasol Stars* is officially a sequel to *Rainbow Islands*. Despite its subtitle and similarity, it's nominally separate from the original *Bubble Bobble* line as Bub and Bob are back in human form and armed with parasols. There's a tortuous tale to Ocean's C64 conversion – check out gamesthatwerent.com/gtw64/parasol-stars for the whole story.

PUZZLE BOBBLE

Known as *Bust-A-Move* outside of Japan, *Puzzle Bobble* is a bubble-matching game with little in common with *Bubble Bobble* aside from its characters and candy-cute look. Players take control of Bub and Bob in dragon form, competing against each other or solo to clear the play area of coloured bubbles.

BUBBLE SYMPHONY

Taito gave us a third *Bubble Bobble* sequel in 1994, taking the base gameplay of its original hit and expanding it into a colourful explosion of bubble-blowing fun. Now with new playable characters, enemies and branching levels, the riot of colour can make play a bit messy at times – but it's still an enormously enticing arcade game.

THE EVOLUTION OF INDIANA JONES™ GAMES

THE 1982 VIDEOGAME DEBUT OF INDIANA JONES WAS FOLLOWED BY A SERIES OF ACCLAIMED RELEASES THAT CONTINUES TO THIS DAY. KEY CREATIVES BEHIND SOME OF THE GREATEST INDY GAMES TELL RETRO GAMER HOW THIS GAMING LEGACY HAS EVOLVED

WORDS BY RORY MILNE

» [Atari 2600] You don't get far in *Raiders Of The Lost Ark* without buying items at the marketplace.

» [Atari 2600] This hole in a wall in *Raiders* isn't there when you start the game; you somehow need to create it.

Long before Lucas and Spielberg's *Raiders Of The Lost* Ark appeared in cinemas in 1981, it was widely expected that its archaeologist adventurer Indiana Jones would be a big draw. This was certainly the case, so much so that *Raiders* became the most profitable and one of the best reviewed movies that year. An adaptation was soon licensed for the Atari 2600, and as *Raiders* director Steven Spielberg was a keen gamer he wanted to meet prospective developers.

He first met *Yars' Revenge* creator Howard Scott Warshaw. They hung out, and Howard won over the director by joking that he might be part of an advance alien scout party making movies to convince humanity that they mean us no harm. "I had an interview with Spielberg because he wanted to choose the programmer for *Raiders*," Howard recollects. "We chatted for a while, and then my weirdness kind of took over. I told him about my theory that he was an alien! I think he just loved that, because the next morning when I got to work he had talked to Warner or Atari and had said that he didn't need to see anyone else. I only saw him twice more during the entire development. He would come to Sunnyvale and I would give him a demo of the game, and then we would have lunch together."

> "INDIANA JONES HAD TO BE SMART AS WELL AS ADVENTUROUS AND CAPABLE. I WANTED TO DO BOTH, SO I MADE RAIDERS AN ACTION ADVENTURE GAME"
>
> HOWARD SCOTT WARSHAW

Since *Raiders*' hero was as adept at using his intellect to solve problems as he was at overcoming physical challenges, Howard designed his Atari 2600 adaptation as part action game/part adventure, and he looked to an earlier 2600 title for inspiration. "Indiana Jones had to be smart as well as adventurous and capable," Howard reasons. "I wanted to do both, so I made *Raiders* an action adventure game. My goal was to do the biggest adventure game that you could possibly imagine on the Atari 2600. The game *Adventure* had been genre-defining, so to me that was the launch spot. Then if I was going to stand on those shoulders I needed to do something to improve the view."

Of the many improvements made to what had been defined by *Adventure*, *Raiders*' inventory stood out as one of the most innovative. It allowed players to collect, arrange and combine multiple objects in order to solve the game's challenging puzzles. "There were cases where you had to manipulate your

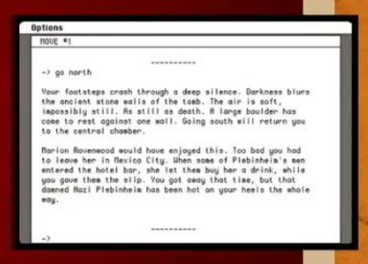
» [Atari 2600] Indy's grappling hook in *Raiders* may just be a spinning dot, but it's a very effective visual.

STAGES OF EVOLUTION: INDY IN VIDEOGAMES 1984–1988

INDIANA JONES IN THE LOST KINGDOM

■ This C64 exclusive is part puzzle game/part platformer. It sets the player the task of completing logistic puzzles across six levels, all without any instruction on how to do so! All manner of hazards hamper your attempts to platform around, from bats and butterflies, to gargoyles and deadly orbs.

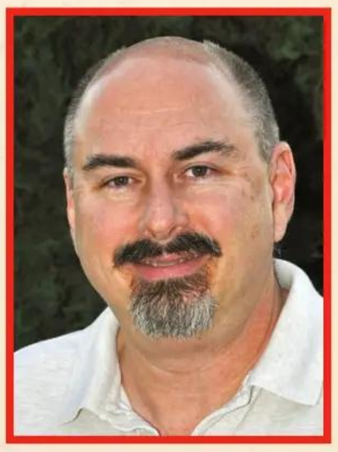
INDIANA JONES IN REVENGE OF THE ANCIENTS


Options
MOVE #1
-> go north
Your footsteps crash through a deep silence. Darkness blurs the ancient stone walls of the tomb. The air is soft, impossibly still. As still as death. A large boulder has come to rest against one wall. Going south will return you to the central chamber.
Marion Ravenwood would have enjoyed this. Too bad you had to leave her in Mexico City. When some of Plebinhein's men entered the hotel bar, she let them buy her a drink, while you gave them the slip. You got away that time, but that damned Nazi Plebinhein has been hot on your heels the whole way.
->?

■ Set in the Mexican jungle, *Revenge Of The Ancients* is a challenging text adventure where death waits around every corner. Your goal is to recover a golden key before the Nazis get it. It's visible from your starting location, but of course you can't claim it without first solving numerous puzzles.

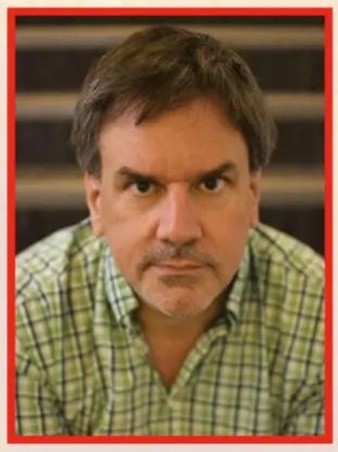
INDIANA JONES AND THE TEMPLE OF DOOM

■ Developed by the same team that made the arcade game of the same name, the NES *Temple Of Doom* has 12 variations of the stages found in the coin-op. These are referred to as waves. Helping you to beat them are pick-ups not found in the arcade title, such as guns, swords, extra lives and extra time.



» *Raiders* developer Howard Scott Warshaw is now a therapist. He discusses the game in his book – see onceuponatari.hswarshaw.com

» After working on the *Temple Of Doom* coin-op, Mike Hally produced many more videogames before retiring from the industry.



» Ron Gilbert is still creating games, *The Last Crusade: The Graphic Adventure* remains one of his favourite projects to this day.

» Long after producing Factor 5's *Greatest Adventures* and *Infernal Machine*, Julian Eggebrecht continues to run the studio.

» Creative director at MachineGames Axel Torvenius was instrumental in the development of *The Great Circle*.

» Executive producer at Lucasfilm Games and Indy super fan Craig Derrick played a crucial role in *The Great Circle*'s creation.

Restoration work of Drew Struzan's *Indiana Jones And The Infernal Machine* art by Jan Hofmeister.

» [Arcade] There's a sequence of mine cart stages in *Temple Of Doom* with more hazards in each one.

» [Arcade] The challenging rope bridge in *Temple Of Doom* is a textbook exercise in twitch gameplay.

Stages Of Evolution:

INDY IN VIDEOGAMES

1989–1992

INDIANA JONES AND THE LAST CRUSADE: THE ACTION GAME

■ Released alongside Lucasfilm's graphic adventure adaptation of *The Last Crusade*, this action-focussed counterpart has you platforming, artefact collecting and whipping your way through four stages based on scenes from the movie, set in Colorado caves, a circus train, a Zeppelin and Castle Grunwald.

INDIANA JONES AND THE LAST CRUSADE

■ There's a variety of gameplay in this NES exclusive. It has a beat-'em-up on a ship and a sliding puzzle stage, there are top-down motorcycle chases and a maze of corridors in its Castle Grunwald level. As the plot unfolds, you get some choice over the order you play these eclectic challenges in.

THE YOUNG INDIANA JONES CHRONICLES

■ Based on the TV show of the same name, Jaleco's NES title sees young Indy fight in the Mexican Civil War before heading to the French and German battlefields of World War I. Each country has a selection of tough side-scrolling run-and-gun and shoot-'em-up stages, platforming levels and boss fights.

▶ inventory in a certain way," Howard considers. "So you could have the same objects, but if they weren't in the right order you wouldn't be able to execute some challenges. Even if you got all of the objects and got down from the mesa then one of the thieves might steal your shovel. That sucked, because it meant that you had to go through all of that again!"

> "THE TEMPLE OF DOOM MOVIE WAS ALL ABOUT INDY AND HIS WHIP, SO HAVING IT ATTACHED TO HIM IN THE COIN-OP AT ALL TIMES WAS A NO-BRAINER"
>
> MIKE HALLY

Mesas – flat-topped desert hills – played an important role in Howard's game. He devised a novel way for Indy to get from one to another, and an exciting method of getting the hero down to ground level from them. "I figured Indy could use a grappling hook to get between mesas," Howard enthuses. "It was about what I could do graphically to create action and to move him around. That also made the map room work, where you saw a map that told you where the Grail was. The idea of jumping off the mesa with a parachute to get to the Grail was just because I wanted some sort of hand-eye co-ordination challenge."

» [Arcade] In the *Temple Of Doom* coin-op you rescue children from Mola Ram by whipping open their cages.

The 2600 *Raiders* adaptation sold over a million copies on its release in 1982, and in 1984 it was followed by the C64 platformer/puzzler *Indiana Jones In The Lost Kingdom*. In 1985, Atari released an arcade game based on the 1984 *Raiders* sequel *Indiana Jones And The Temple Of Doom*. Prior commitments meant that the *Star Wars* coin-op developer Mike Hally couldn't produce Atari's Indy title from the outset. "I'm sure the success of the *Star Wars* coin-ops led to a good relationship with Lucasfilm," Mike notes, "but when the *Temple Of Doom* project started I was working on *Road Runner*, so my involvement came after that. I was put on there to get the game done, because my expertise other than being a producer and lead designer was playfield design and gameplay. So I took what they had and I fully developed it."

Of course, not every scene in the *Temple Of Doom* movie was suited to being a level in the coin-op, so its development team adapted the action sequences that suited the hardware they were designing for. "If you strip out how the characters meet and how Indy gets to certain places then what you come down to is: he was in the mines to save the children and then he gets into the mine carts," Mike recalls. "Then

» [PC] One novel use of Indy's whip in the *Last Crusade* adventure involves draining a water-logged room.

Lord Robert McFalfa, I'm here to inspect the tapestries.
Are you the one with the relatives in town?
Never mind that. Who's in charge here?
Throw a punch

» [PC] The *Last Crusade* adventure lets you best opponents with conversation as well as by using your fists.

there's the Temple Of Doom, and finally there's the end sequence with the rope bridge. Those were some of the best action scenes in the movie, so those were the action sequences that were pulled from the movie for the coin-op."

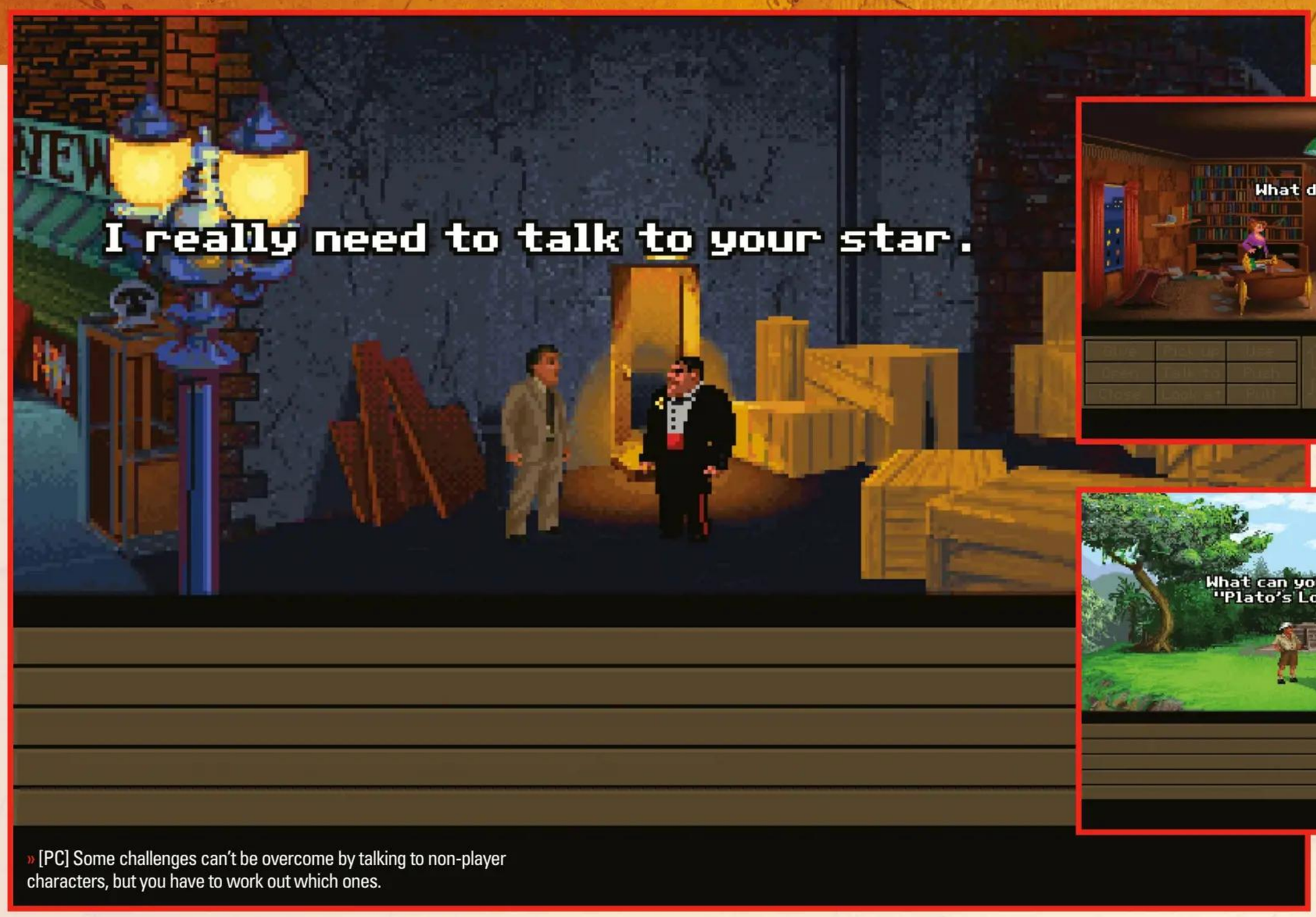
The sequences adapted from the second *Indy* film involved different gameplay and mechanics, but a constant throughout the coin-op was that Indy could always rely on his whip to defend himself and use as a makeshift swing. "The *Temple Of Doom* movie was all about Indy and his whip, so having it attached to him in the coin-op at all times was a no-brainer," Mike grins. "You had to position him so that it would hit the target you wanted to hit. Then one of the most fun parts of the game was using it to swing over gaps to get over hazards. So wherever we could use the whip we did."

Indy's whip was essential in the finale of Atari's *Temple Of Doom* arcade game, which tested players' reactions by sending enemies and projectiles at them as they crossed the rope bridge seen in the film. "We put Mola Ram in between Indy and getting to the other side to save his friends," Mike remembers, "so he was constantly having to deal with flaming hearts coming from the right and Thuggees moving fast from the left. You were constantly whipping to the right and the left, and moving back and forth, so it was a timing thing, but I think we captured the essence of the movie's finale. Later on, the *Temple Of Doom* coin-op team did the NES version. I did all the design for that from scratch, based on designing a consumer game versus what you would do for a coin-op."

» [PC] Making this arcane machine function in the *Last Crusade* adventure requires spare parts and smarts.

» [PC] Numerous locations from the movie are featured in the game.

» [PC] We'd be making this face in a tomb surrounded by skeletons as well.



» [PC] Some challenges can't be overcome by talking to non-player characters, but you have to work out which ones.

» [PC] Often chatting to people in *Fate Of Atlantis* gives you hints on what you should do next.

» [PC] Sophia Hapgood was created for *Fate Of Atlantis*, and she proves to be Indy's equal in every respect.

» [PC] The adventure in *Fate Of Atlantis* takes you around the world to many interesting locations.

STAGES OF EVOLUTION:

INDY IN VIDEOGAMES

1994–2001

INSTRUMENTS OF CHAOS STARRING YOUNG INDIANA JONES

■ If this challenging Mega Drive game isn't striking you with lighting then it's sending birds or bats after you that cause you to fall off the ledge that you've spent ages platforming to! You get young Indy's whip, a pistol and grenades to defend yourself as his mission takes you around the world.

INDIANA JONES AND HIS DESKTOP ADVENTURES

■ Best described as a point-and-click action adventure, *Desktop Adventures* sets you lock-and-key puzzles that you solve through exploration of its sprawling world, speaking to non-player characters and beating foes. The latter is done much like you would in an action game, albeit by using the mouse.

INDIANA JONES AND THE INFERNAL MACHINE

■ Its level designs and top-down viewpoint set it apart from the third-person perspective PC and N64 versions, but the Game Boy Color *Infernal Machine* otherwise captures the essence of its counterparts. There's more emphasis on platforming and dealing with opponents, but this doesn't do it any harm.

▶ Before the *Temple Of Doom* coin-op was adapted for the NES by Mike and his team in 1988, the text adventure *Indiana Jones And The Revenge Of The Ancients* appeared in 1987. Then in 1989 a computer and console action game based on that year's *Indiana Jones* movie, *Indiana Jones And The Last Crusade*, arrived. Interestingly, three Czech text adventures for the ZX Spectrum were released by Frantisek Fuka between 1985 and 1990. They're not official releases, but are still of interest if you enjoy Indy's exploits. *The Last Crusade* was also adapted as *Indiana Jones And The Last Crusade: The Graphic Adventure*, which was given to Ron Gilbert and others at Lucasfilm Games after a third-party developer let it down. "The *Indiana Jones* rights had been given to someone else, and they weren't performing. They weren't actually making the game," Ron points out. "So Lucasfilm pulled the rights back, and David Fox, Noah Falstein and I had nine months to finish the whole game – start to finish. So the three of us, who were some of the most experienced adventure game creators at the company at the time, just *jumped* on the project to try to get it done."

As with earlier *Indy* movie adaptations, consideration was given to which of *The Last Crusade*'s action scenes would work in Lucasfilm's graphic adventure. A decision was then made to adapt sequences that could be lengthy puzzles. "Noah was in charge of the action sequences, so it was him that mostly focussed on those," Ron credits. "But I remember some of the conversations were about what was going to translate well, because we couldn't put everything in the game. We certainly wanted things that would have some duration to them, like working your way through the castle and finding parts of stuff. So we at least wanted to extend the action sequences out to that degree."

An interesting approach was taken to solving puzzles in *The Last Crusade: The Graphic Adventure*, in that there were up to three solutions for each with points accrued over multiple playthroughs depending on how many solutions you found. "Some of that was based on how Sierra On-Line games calculated your score," Ron acknowledges. "But we didn't just want to have a score, so we called it the IQ – the Indy Quotient. That was a measure of how well you were being Indy. We had different ways to solve puzzles: the action way, the dialogue way and the puzzle way. To get the IQ up you played the game again to try each way."

> "WE DIDN'T JUST WANT TO HAVE A SCORE, SO WE CALLED IT THE IQ – THE INDY QUOTIENT. THAT WAS A MEASURE OF HOW WELL YOU WERE BEING INDY"
>
> RON GILBERT

Unlike the game's IQ points, its dialogue system was entirely original. It allowed players of Lucasfilm's game to immerse themselves in Indy's world by having conversations with its inhabitants. "The dialogue puzzles were a huge thing, because we didn't have those before," Ron points out. "Noah was probably instrumental in figuring those out. They ended up being super influential, every adventure game after that had dialogues in them. They really allowed players to feel like they were a part of the story because even when they didn't really affect the game you still felt more involved in what you were doing." In terms of oversight from the movie's creative partnership, its director made periodic visits to inspect progress on the graphic adventure adaptation, although these were largely motivated by his passion for gaming. "Spielberg came by the office because he was visiting George for other reasons," Ron mentions. "He was a big gamer; he *loved* games. I remember showing him our game, and he would muscle his way in to grab the mouse."

After *The Last Crusade* adventure game launched in 1989 to much acclaim, a NES adaptation of the third *Indy* movie was released in 1991. The 1992 Lucasfilm original adventure *Indiana Jones And The Fate Of Atlantis* was clearly influenced by the former, and was just as appreciated by gamers. This was especially true of Craig Derrick, who is now Lucasfilm Games' executive producer of the current ▶

Stages Of Evolution:

INDY IN VIDEOGAMES

2003–2009

INDIANA JONES AND THE EMPEROR'S TOMB

■ A stylish prequel to *Temple Of Doom* in game form, the *Emperor's Tomb* contains all the third-person platforming, exploration, problem solving and combat that you would expect in a *Tomb Raider* title. There are great setpieces and of course a globe-trotting narrative with a quest for an ancient artefact.

LEGO INDIANA JONES: THE ORIGINAL ADVENTURES

■ Considering *Lego Indiana Jones* involves collecting Lego studs for points and building items from Lego blocks, it's a remarkably accurate if more family friendly adaptation of the first three films. It has a series of sidekicks that you can switch to if needed or let a second player or AI control.

INDIANA JONES AND THE STAFF OF KINGS

■ While similar to the *Emperor's Tomb* in terms of its platforming, adventuring and brawling, the *Staff Of Kings* distinguishes itself with its setpieces. These include climbing a burning rope bridge using *Track & Field*-style controls, a combat flight sim stage and a firefight where you aim using a reticule.

» [SNES] *Temple Of Doom*'s rope bridge finale makes for a memorable level in *Greatest Adventures*.

» [SNES] Even if you lose all your weapons in *Greatest Adventures* you can still use your fists.

» [SNES] Boss fights are a big part of *Greatest Adventures*, and this battle for the Holy Grail is a tough one.

Indy game *The Great Circle*. "I'm an Eighties kid, and I was a huge fan of *Raiders*, *Temple Of Doom* and *The Last Crusade*," Craig beams. "*Fate Of Atlantis* came out in the Nineties when we were all wondering if we were going to get another movie. The developers just nailed the tone, sense of adventure and incredible dialogue. Back then, *Fate Of Atlantis* felt like the movie we never got, because it really captured the spirit of the movies that came before it."

In an evolution of there being up to three ways to solve puzzles in its *Last Crusade* adventure, Lucasfilm developed three ways to play *Fate Of Atlantis*: the Team Path, Wits Path and Fists Path. "I think it was a brilliant design choice," Craig assesses. "We spoke a lot about it during the development of *The Great Circle*. Indiana Jones is a character that can solve problems in different ways. He isn't just a brawler or an academic or an adventurer; he's all those things, and I think it really made the character come together in gameplay for the first time. Giving players that choice at that time in games was really interesting, because it branched the story with different experiences along the way."

> "FATE OF ATLANTIS FELT LIKE THE MOVIE WE NEVER GOT, BECAUSE IT REALLY CAPTURED THE SPIRIT OF THE MOVIES THAT CAME BEFORE IT"
>
> CRAIG DERRICK

Of the three different ways *Fate Of Atlantis* could be played, its Team Path was perhaps the most unique. It relied on Indy co-operating and getting help from non-player character Sophia Hapgood, a psychic and fellow archaeologist. "Sophia Hapgood was a really great character, and the *Fate Of Atlantis* team really knocked it out of the park with her!" Craig exclaims. "She made the entire story work in a lot of ways, because you needed a good partner and the call to adventure. So Indy goes to New York to find her and then he gets pulled into this adventure. A lot of times that's just the character of Indiana Jones."

In 1992, both *Fate Of Atlantis* and a NES platformer based on the TV spin-off *The Young Indiana Jones Chronicles* hit shop shelves and were well received. Two years later, Factor 5 developed an ambitious SNES adaptation of all three *Indiana Jones* movies called *Indiana Jones' Greatest Adventures*, although this hadn't been the intention of its producer Julian Eggebrecht. "I was hoping to make three games, because I assumed that it should be possible to do *Super Raiders Of The Lost Ark*, *Super Temple Of Doom* and *Super Last Crusade*," Julian recollects. "Instead we had to fit all three movies into one game because LucasArts projected that it would be done by 1994, and by 1995 it was expecting the next generation Nintendo console would be out. Of course people still liked *Greatest Adventures* a lot."

A challenging Mega Drive title called *Instruments Of Chaos Starring Young Indiana Jones* also came out in 1994, and in 1996, a PC/Mac action adventure *Indiana Jones And His Desktop Adventures* followed. In 1999, Julian produced an N64 adaptation of the newly released PC title *Indiana Jones And The Infernal Machine*. Despite a tight deadline, he all but redesigned it for the console. "We wanted to do a completely reinvented N64 version of *Infernal Machine*," Julian reflects, "so we took the cancelled PlayStation version as the basis and ported that to the N64, then we merged it with our *Battle For Naboo* engine. We replaced the PC controls with a new camera and control system inspired by *Ocarina Of Time*, and then we made the weapons lock-on with targeting and all of that, so it was essentially *Ocarina Of Time* with Indiana Jones."

Infernal Machine reviewed well in 2000, as did a 2D Game Boy Color version in 2001. In 2003, the action adventure *Indiana Jones And The Emperor's Tomb* was released, followed by 2008's humorous retelling of the first three movies – *Lego Indiana Jones: The Original Adventures*, which coincided with the fourth film *Indiana Jones And The Kingdom Of The Crystal Skull*. A sequel called *Lego Indiana Jones 2: The Adventure Continues* appeared in 2009, as did the LucasArts action title *Indiana Jones And The Staff Of Kings*. Then in 2011, ▶

» [Nintendo 64] Indy is known for his stealth, and this quality is essential to success in *Infernal Machine*.

» [Nintendo 64] Underwater mazes are just one of the innovative challenges that *Infernal Machine* sets you.

» [Nintendo 64] *Infernal Machine*, *Fate Of Atlantis* and *Desktop Adventures* were all written and designed by Hal Barwood.

"WE WANTED THE PLAYER TO STEP INTO THE SHOES OF INDIANA JONES, AND TO BE UP CLOSE AND PERSONAL WITH DIFFERENT COMPONENTS THROUGHOUT THE GAME"

AXEL TORVENIUS

» [PC] The platforming and traversal in *The Great Circle* are third-person, which helps give Indy more screen time.

» [PC] The first-person perspective brawling in *The Great Circle* really put Indy's opponents in your face.

» [PC] Although it's largely played in first-person perspective, *The Great Circle*'s cutscenes are third-person.

Indy: Stay out of the light.

the Facebook game *Indiana Jones Adventure World* went live.

In 2023, *Indiana Jones And The Dial Of Destiny* arrived in cinemas, then *Indiana Jones And The Great Circle* appeared on PC and Xbox Series X/S in late-2024. *The Great Circle* channels a much earlier movie, as MachineGames creative director Axel Torvenius explains. "It all started with a conscious decision about which version of Indiana Jones we wanted to portray," Axel considers. "We're fans of all the *Indiana Jones* movies, but we settled on *Raiders Of The Lost Ark* being the prime resource. Obviously there have been great games too, like *Fate Of Atlantis*, so those were relevant. Then when we got closer to working with Lucasfilm Games we gained access to its archive and started digging into the juicy secrets."

Unlike earlier *Indiana Jones* games, *The Great Circle* primarily gives players a first-person perspective view of the action. As well as providing a more immersive *Indiana Jones* experience, this was implemented to make its puzzles feel more intuitive. "We wanted the player to step into the shoes of Indiana Jones, and to be up close and personal with different components throughout the game," Axel remarks. "We have a lot of puzzle-solving and interactions with mysteries, like picking up notes and looking at scrolls. We felt all of those close-to-face interactions were best perceived as part of a first-person experience. If they had been third-person you would need to either zoom in or have a pop-up screen, or whatever. We also have a lot of enemies, and when you're punching them in the face you can get so close you can see the saliva, so first-person gets you really close to the action. Although we also have third-person cutscenes and cinematics, and we move the game into third-person for all traversal and platforming."

As well as its first-person viewpoint, *The Great Circle* also stands out for its epic narrative, which involves a source of great power related to mysterious sites around the world that when viewed on a map form a perfect circle. "MachineGames executive producer Todd Howard had this overarching pitch in terms of the core premise that involved the locations of *The Great Circle*," Axel comments. "Well wouldn't it be cool if those were all connected, but what do they connect to and what's happening? We started figuring out what the big idea behind all of that was. I don't like spoilers, but there is a big cool thing at the end that's the enigma you're trying to solve."

The way that *The Great Circle* seamlessly intertwines challenges requiring Indy's physicality, problem-solving and archaeological expertise is equally worthy of note. Axel describes this feat of development as an exercise in connecting gameplay that would otherwise have been disparate. "How did we balance going from crashing a battleship or whatever to the calm after the storm?" Axel ponders. "Well the set up we worked with pushes the player to go into the adventure aspect as well as platforming, and on the way to find a puzzle maybe they encounter a new enemy. I think that helped to make the big puzzles more of an adventure experience rather than just standing on the spot and figuring them out."

With *The Great Circle* now available to own on Sony's PS5, Craig Derrick, the game's executive producer for Lucasfilm Games, considers Indy's importance to the studio over the years and concludes by explaining why great *Indiana Jones* games continue to be made. "Indiana Jones has always been a cornerstone of Lucasfilm and Lucasfilm Games," Craig reviews. "He embodies adventure and mystery and puzzle-solving, and those things make really great games as well as action adventure movies. I think as to why we still make *Indiana Jones* games, well we're all fans. So I think there's absolutely always a place for Indy in gaming, and we were lucky that we had a chance to prove that with *The Great Circle*." ✱

STAGES OF EVOLUTION:

INDY IN VIDEOGAMES 2009–2011

LEGO INDIANA JONES 2: THE ADVENTURE CONTINUES

■ The third *Lego Indy* title, if you count the Java platformer *Mobile Adventure*, *Lego Indiana Jones 2* is packed full of features not found in the original like driving and puzzle-focussed levels. Like the original, it has stages based on the original film trilogy, but it also adapts *The Kingdom Of The Crystal Skull*.

LEGO INDIANA JONES 2: THE ADVENTURE CONTINUES

■ Based purely on *The Kingdom Of The Crystal Skull*, the PSP and DS adaptations of *Lego Indiana Jones 2* primarily favour left/right movement across the screen and adapt some different movie scenes than the PC, Mac and other console versions. Despite this, the portable editions retain the fun of their counterparts.

INDIANA JONES ADVENTURE WORLD

■ Long since shut down, this isometric Facebook game focussed on exploration but had some action elements. You played as a member of a group called The Adventure Society rather than Indiana Jones, but Indy would accompany you. *Adventure World* also had a turn-based combat system and some RPG elements.

SEGA MEGA DRIVE ARCADE HITS

IF YOU WANTED ARCADE ACTION IN THE COMFORT OF YOUR HOME IN THE EARLY NINETIES, SEGA'S 16-BIT SYSTEM WAS THE MACHINE TO OWN. WE SPEAK TO THE DEVELOPERS WHO CRAMMED COIN-OPS INTO THE CONSOLE BACK THEN, AS WELL AS THOSE TAKING ON THAT CHALLENGE TODAY

WORDS BY **NICK THORPE** AND **DARRAN JONES**

It's no secret that the Mega Drive was easily Sega's most successful console, and there are a multitude of reasons for that. A certain speedy blue chap can rightfully claim some credit, innovative marketing definitely played a role and only a fool would ignore the popularity of Electronic Arts and its juggernaut sports games. However, the factor that is undoubtedly closest to the heart of the Mega Drive is its connection to the arcades – Sega built its legacy in the coin-op arena, and its expertise in that area of the business would shape every aspect of the console, from its hardware design and software library to even its marketing.

Development of the Mega Drive began in mid-1986. Hideki Sato, who headed up Sega's home-console R&D division at the time, looked back on this time in the book *Sega Consumer History*. As translated by Shmuplations, he recalled, "By then, arcade games were using 16-bit CPUs. Arcade development was something we were very invested in, so we were always using the most cutting-edge technology there. Naturally, it started us thinking, 'What if we used that technology in a home console?'" In the book *Mega Drive/Genesis: Collected Works* by Read-Only Memory, Mega Drive hardware designer Masami Ishikawa explained that the key goals with the hardware were to have "the basic performance of the preceding system boards – the System I, System II and System 16", while incorporating backwards compatibility with Master System games.

Like the System 16, the Mega Drive would use a 16-bit Motorola 68000 as its main CPU and Zilog Z80 as a sound CPU, with a Yamaha synthesiser chip for audio. However, cost considerations kept the use of the 16-bit CPU in doubt until late on, and Ishikawa believed that Sato made the final decision on that issue. "By using the 68000 we could take advantage of the programming resources already available for arcade use," he explained, though he did note that the company's consumer game programmers were unfamiliar with the CPU. The custom graphics chip designed for the system was likewise subject to cost considerations, and compromises had to be made. "We wanted to include enlarging and minimising capabilities as well as sprite-spinning functionality, but the circuit design was becoming too large to fit on one chip, which would have lowered the production yield rate and hiked up costs, so we had to remove it from the spec," recalled Ishikawa. The system's colour palette was limited for the same reason.

> **"PLAYING ALTERED BEAST IN-STORE, WITH ITS FLUIDITY, LARGE SPRITES, AND VIBRANT COLOURS, COMPLETELY BLEW AWAY MY AMIGA VERSION"**
> **ANDREA BALDIRAGHI**

Regardless, the Mega Drive was a powerful bit of kit when it finally launched in the Japanese market in 1988, as an anecdote from Sato confirms. "I remember very fondly a demonstration we did at an announcement party for the Mega Drive, where we took the Mega Drive version of *Altered Beast* and played it next to the arcade version, and there was almost no difference." Early Japanese promotional materials for the console explained the benefits of the 16-bit CPU by telling readers that most arcade games were already using 16-bit technology, and promised "the same level of game content as in a game centre". Sega chose to put the arcade connection front and centre in its international marketing too, with "We bring the arcade experience home" used as a slogan across early Genesis adverts in print and on TV. "For the first time, the powerful technology used in arcade games has come home to let you play games that look, sound and play exactly like they do in the arcade," boldly claimed one magazine advert. Arcade games typically got top billing in the console's advertising, with double-page spreads heralding the arrival of games like *Golden Axe*, *After Burner II* and *Super Monaco GP*. Likewise, "arcade quality graphics" was a key recurring phrase in UK adverts for the console.

» [Mega Drive] *Altered Beast* was a key early demonstration of the console's power, and a good pack-in game.

Early press impressions of the Mega Drive highlighted the machine's credentials as a capable conversion platform. Writing for *Computer & Video Games*, Jaz Rignall claimed that *Altered Beast* had "looks, sounds and playability that are indistinguishable from the coin-op" and said that *Super Thunder Blade* and *Space Harrier II* offered "smooth 3D update and wonderful graphics that put the majority of existing 16-bit titles to shame". Over in the US, *Video Games & Computer Entertainment*'s Andy Eddy felt that *Altered Beast* was "a good choice to be bundled with the console; it shows off the superior visual and aural capabilities of the Genesis as well as being a popular arcade game". Not everybody was thrilled, though. In *Electronic Gaming* ▶

INTERVIEWEES

PAUL CARRUTHERS
- *Mortal Kombat, Terminator 2: The Arcade Game*

DAVID LEITCH
- *Mortal Kombat II, Primal Rage*

CARL HENRIK SKARSTEDT
- *NBA Hangtime*

ANDREA BALDIRAGHI
- *Mega R-Type*

MAURO XAVIER
- *Final Fight MD*

» [Mega Drive] "Acclaim had allocated a big marketing budget so they were very closely involved," Paul remembers.

» [Mega Drive] David feels that *Primal Rage*'s giant sprites were arguably "the USP of the original game".

» [Mega Drive] *NBA Hangtime* has some very smooth character animation, as you'd hope from a late release.

Monthly, Steve Harris cast doubt on the early software, saying that, "Sega does have an advantage in recognisable arcade titles [...] but these initial attempts do not take full advantage of what the machine can do."

The early strategy of focussing on arcade games paid off. "For me, they were key system sellers," says homebrew coder Andrea Baldiraghi. "Playing *Altered Beast* in-store, with its fluidity, large sprites and vibrant colours, completely blew away my Amiga version. It felt like the arcade experience had come home!" Homebrew coder Fabrice Fernandez was also won over. "I have very precise and vivid memories of the first time I saw the Mega Drive in *the* French video magazine *Tilt*. They covered the Tokyo Game Show where it was showcased, and the first screenshots of *Golden Axe*, *Thunder Force II* and especially *Ghouls 'N Ghosts* (my favourite franchise of all time), were absolutely mind-blowing," he recalls. "When I finally got my Japanese Mega Drive bundled with *Golden Axe*, I plugged in the cartridge, turned the console on, and it was there: the arcade at home. Pure magic."

Interestingly, the concessions made during the console's design process meant that the Mega Drive did struggle with the company's biggest arcade attractions. "I was never a big fan of Mega Drive versions of Sega's Super Scaler games such as *Out Run* or *After Burner II*," says Andrea. "I love real Super Scaler graphics, it gives games an incredibly joyful style, but home versions were always too sacrificed with choppy pseudo-scaling, due to the lack of proper hardware." Fabrice feels similarly. "*Super Thunder Blade* and *Galaxy Force II* are probably the worst. Mostly because the horsepower gap between the Mega Drive and the original hardware they were running on was way too high." While they were often the best home versions available at the time, they certainly didn't feel as close to the arcade experience as many of the other games available.

"I WATCHED THAT VHS SO MANY TIMES TRYING TO WORK OUT ALL THE NUANCES OF GAMEPLAY, AND I STILL DON'T KNOW HOW MUCH OF IT I GOT RIGHT"
PAUL CARRUTHERS

Unlike with the Master System, Sega would gain plenty of third-party support in its quest to bring the arcades home. Taito had been one of the few companies that had consistently made games available on the SG-1000 and Master System, and was converting games like *Final Blow*, *The NewZealand Story* and *Rastan Saga II* as early as 1990. Other early supporters included companies on bad terms with Nintendo – Namco was unhappy with its licensing agreement and converted the likes of *Phelios*, *Burning Force* and *Rolling Thunder 2* to Sega's machine. Atari Games' home-publishing division Tengen was going through a legal battle with Nintendo, and brought games including *Klax*, *Paperboy*, *Roadblasters* and *Pac-Mania* to the Mega Drive. With Capcom not able to work on the console directly, Sega decided to license the company's games and convert them itself, bringing over the likes of *Ghouls 'N Ghosts* and *Strider* – the latter of which it promoted heavily.

Sega's focus began to shift in the second half of 1991 as the success of *Sonic The Hedgehog* sent the console's popularity skyrocketing – where arcade games had once dominated its publishing output, more effort subsequently went into developing and promoting original software. But that success only attracted more third parties to the Sega fold, ensuring a continued supply of fresh arcade conversions. Data East had released *Midnight Resistance* in 1991 but ramped up production for 1992, bringing over *Two Crude Dudes*, *Atomic Runner* and *Captain America And The Avengers*. Despite not having an arcade presence of its own, Acclaim licensed games from Williams and Midway of the WMS Group, starting off with *Super Smash TV* in 1992, and Konami made its Mega Drive debut with *Sunset Riders* at the tail end of that year. As the fighting game boom swept arcades, Takara began to bring over SNK games like *Fatal Fury* in early 1993, and by the autumn Capcom had brought its smash hit *Street Fighter II* to Sega fans.

Paul Carruthers was the programmer of *Terminator 2: The Arcade Game* and *Mortal Kombat* for Probe, the developer that undertook conversions on Acclaim's behalf. Although the games industry was becoming larger and more globalised, Paul's experience with *Terminator 2* was decidedly old school. "Some of the testers at Probe had spent a day in an arcade in Croydon with a huge bag of 10p coins. They'd played the game from start to finish and videoed the whole thing for me," he recalls. "So I had a VHS of a complete playthrough,

» [Mega Drive] How much do you think Probe's testers spent on getting past the truck stage?

» [Mega Drive] Shooters like *Truxton* were a staple of the Mega Drive library, and still hold up well today.

» [Mega Drive] *After Burner II* was arguably the best of the Super Scaler conversions, but still lost detail.

MASTERPIECES

THE ARCADE CONVERSIONS THAT STILL WOW

GHOULS 'N GHOSTS
1989 • SEGA R&D 2

According to Den Faminico Gamer, this impressive conversion was handled by Yuji Naka after he requested that Sega license Capcom's game after seeing it in arcades. Naka did a superb job and his conversion features all the elements of the arcade original, including its majestic bosses.

GOLDEN AXE
1989 • SEGA R&D 2

The sprites are quite dinky, but no other home version came close to Sega's adaptation of its hit arcade game when it launched on its 16-bit console. It's not only extremely faithful to the arcade original, but even goes so far as to add an additional level once Death Adder is defeated.

FORGOTTEN WORLDS
1989 • SEGA R&D 2

Sega couldn't replicate Capcom's arcade control scheme, so it came up with a suitable alternative (you can rotate with the A and C buttons), allowing you to concentrate on taking down the game's huge mayors. It's a very shallow game, but it's still action packed.

STRIDER
1990 • SEGA R&D 6

Rightly hailed on release for its arcade accuracy, Sega's adaptation of Capcom's over-the-top coin-op still manages to impress. Yes there's a fair bit of flicker and certain enemy sprites are quite small, but the action is every bit as hectic as the arcade original. A genuine Mega Drive classic.

HELLFIRE
1990 • NCS

There's a shocking amount of great shmups to be found on Sega's console, but this remains one of the best. NCS does a terrific job of capturing the atmosphere of the arcade original, while the game's distinctive weapon mechanics and staggeringly tough bosses are all perfectly replicated.

ROLLING THUNDER 2
1991 • NAMCO

Namco did some fantastic work on Sega's console and its conversion of its popular arcade sequel remains a great example. It doesn't look quite as impressive as the arcade original, but it's otherwise extremely authentic to play. It also has a great password system that's as fun to use as it is helpful.

STREET FIGHTER II: SPECIAL CHAMPION EDITION
1993 • CAPCOM

It may have arrived 15 months after its SNES counterpart and required the Mega Drive's new six-button controller to get the most out of it, but fans of Capcom's fighter simply didn't care. Capcom's conversion of its arcade juggernaut is supremely good.

VIRTUA RACING
1994 • SEGA AM2

Yes it uses additional hardware to power it, but it's still astounding that Sega's arcade racer was released on its 16-bit console, let alone that it turned out to be such good fun. It's certainly rather sluggish to play when you return to it today, but it still manages to hold its own against the system's other racing games.

MORTAL KOMBAT II
1994 • PROBE SOFTWARE

The expectation for Probe's *Mortal Kombat* sequel was immense on Sega's console, but the talented team smashed it, delivering a cracking conversion that still holds up today. It's not only chock-full of content, but feels exceptionally close to the arcade original.

NBA JAM
1994 • IGUANA ENTERTAINMENT

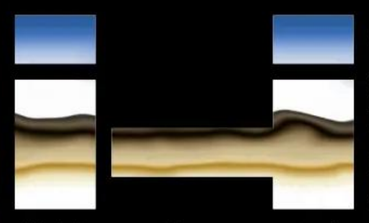
Midway's fast-paced sports game remains a delight to play on Sega's 16-bit system and it's largely due to Iguana's excellent conversion. It's packed with content, can cater for four players and offers better load times than its Mega-CD counterpart. The later *Tournament Edition* is also worth seeking out.

» [Mega Drive] Sadly, this version of *The NewZealand Story* never saw release outside of Japan.

» [Mega Drive] *Flicky* was an odd game to release – it was old and visually dated, but still great fun.

» [Mega Drive] *Turbo OutRun* was only OK in arcades, and without the scaling it lost even more on Sega's home console.

but that was about it. I watched that thing so many times trying to work out all the nuances of gameplay, and I still don't know how much of it I got right." There's an amusing twist to the tale, though. "Some time later Tony Beckwith, the producer on *Terminator 2*, admitted that he'd had the source code for it all the time, but didn't think it would help so he never told me!"



owever, having good access to the arcade source materials was more common and Paul did have the assets for *Mortal Kombat*. "The source code showed me that they had used a 'Process' system common to Midway games which worked a bit like multithreading but in software. So, for example, each fighter was a Process with its own program and its own memory. There was no central game loop as other games might have had at the time. UI was a Process, the background was a Process and so on," he explains. "I figured the best way to proceed was to try and emulate this system on the Mega Drive as closely as possible so that I could then lift the game logic straight from the source code and the game should then play exactly the same as the original. With only 64KB of RAM this

BEYOND THE ARCADES

HOW THE MEGA DRIVE IMPROVED ARCADE CLASSICS

SUPER HANG-ON

1989 • SEGA R&D2

Sega went all out with its home conversion of *Super Hang-On*. Yes, the arcade game is faithfully replicated in all its glory, but it's dwarfed by Original Mode, which adds rivalries with other bikers, the ability to customise your bike and so much more. It makes for a truly comprehensive package.

SUPER MONACO GP

1990 • SEGA R&D2

If you're not keen on racing around on motorcycles, Sega's adaptation of its Formula 1 arcade racer added a similar campaign mode that was just as lengthy to complete. In addition to its arcade mode, World Championship contains all 16 tracks from the 1989 Formula 1 and lots of customisation and rivalry options just like *Super Hang-On*.

MERCS

1991 • SEGA CS1

Once you get bored of Sega's excellent conversion, you can lose yourself in *Mercs*' Original Mode. It plays very similarly to Sega's later *GG Shinobi* games, with your lone Merc recruiting other team members once he rescues them. You can then switch between them as you tackle each stage.

SLAP FIGHT MD

1993 • TOAPLAN/MNM SOFTWARE

In addition to an astoundingly good conversion of the (then-ageing arcade game), heading to the options menu of this Eastern exclusive reveals a brand-new game. It's a genuinely superb update with superior aesthetics and the ability to jettison power-ups to create dangerous bombs. It's pricey, so grab the incoming reissue.

GAUNTLET IV

1993 • M2

M2's first game doesn't pull any punches. It not only offers a resoundingly accurate version of the 1985 arcade hit, but adds a huge RPG-like Quest mode, which sees your adventurers clearing four elemental towers. You can even save progress, so you don't need to tackle it in one huge sitting.

» [Mega Drive] *Columns* was virtually identical to the arcade version – but then, the hardware was nearly identical too.

» [Mega Drive] Tengen produced some very solid conversions, with *Paperboy* being a great example.

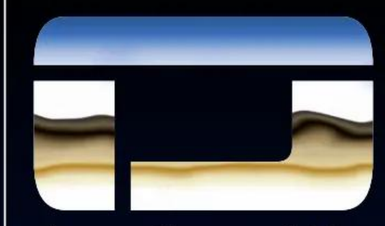
was very tight but I found room for four processes – two for characters and two for weapons. Once the system was working, all the game logic went in very quickly – a couple of weeks or so."

"THE GENERAL STRATEGY WAS THAT CUTS WERE LIGHTEST ON STUFF THE PLAYER SAW OFTEN"
DAVID LEITCH

David Leitch was the lead programmer on *Mortal Kombat II* and *Primal Rage*, and although the Mega Drive was getting on a bit by 1994, he didn't feel that the gap between the home and arcade hardware was an issue. "If you think of the essential features of *Mortal Kombat II* and *Primal Rage*, they were things that could easily be replicated on the Mega Drive. You've got two characters knocking seven bells out of each other against a scrolling background and everything's in 2D," he explains. "The main issue with both games was cartridge size. For example, early on in *Mortal Kombat II*, I implemented Liu Kang's dragon Fatality. At that stage, all the animation frames were still in the sequence and it looked fucking awesome. But if we'd stuck to that approach, we'd have needed cartridges maybe twice the size of the spec the publisher had settled on." Bigger cartridges meant higher manufacturing costs, and with *Mortal Kombat II* already at a hefty 24Mbit, animation cuts were inevitable.

"The bulk of that fell to Terry Ford, the main artist on the project," David tells us. "The general strategy was that cuts were lightest on stuff the player saw often – eg fighters idling – but had to be far more significant, just out of necessity, on stuff they only saw rarely… like Liu Kang's bloody dragon Fatality. To put it glibly, it turned his job with the animation sequences from just pressing a button, to sitting staring at them all day, figuring out how they could be most elegantly hacked, slashed and re-used. Also, bear in mind, individual frames that flash by at 60fps can get away with being a bit shonky. But if the player ends up seeing them for a relatively long time, then they need to be tidied-up. Meaning more work for Terry."

» [Mega Drive] *Aero Blasters* is another example of the great shoot-'em-up action available on Sega's Mega Drive.



Of course, the Mega-CD had been introduced by that point and CD-ROMs offered vastly greater storage than cartridges – surely a boon in such situations? "The data on the CD loads quite slow so you don't get as much benefit from the large storage as you might expect," says Carl-Henrik Skarstedt, who worked on *Samurai Shodown* and *Fatal Fury Special* for the add-on and felt that its best features were elsewhere. "The major benefit of the CD add-on is the CPU power, another 68000 that is faster than the main CPU, in addition to extra RAM. We used it for runtime decompressing the sprites for the players so we could keep as many original frames as possible in the extra RAM. Of course we could stream the original background music, that adds a lot of authenticity."

"The big problem was the speed of reading data off the CD and transferring it to the CPU side of the system," confirms Paul, who also programmed the Mega-CD version of *Mortal Kombat*. "For normal gameplay this was doable by reading all the graphics off the CD before each match started. However, this meant we had to reduce the number of animation frames quite drastically and this had a terrible effect on the look and feel of the game," he explains. "Then came the biggest problem of all – the wizard Shang Tsung. He had the ability to morph between characters and there was no way we could store all those frames at ▶

SYSTEM SYMBIOSIS

HOW THE MEGA DRIVE GAVE BACK TO THE ARCADE SCENE

While the influence of the arcade scene on the Mega Drive is well known, fewer people are aware that Sega based three arcade boards on its successful 16-bit console. The first of the bunch to arrive was the System C, which powered games like *Columns* and its sequel. This board omits the Z80 CPU and runs the Motorola 68000 CPU slightly faster than the home hardware at 8.95MHz, allowing it to handle the sound duties too. It also uses an external colour encoder for far greater colour depth than the Mega Drive. The System C2 is a minor revision that adds some audio sample playback hardware, and hosted games such as *Thunder Force AC*, *Puyo Puyo* and the Print Club photo booths.

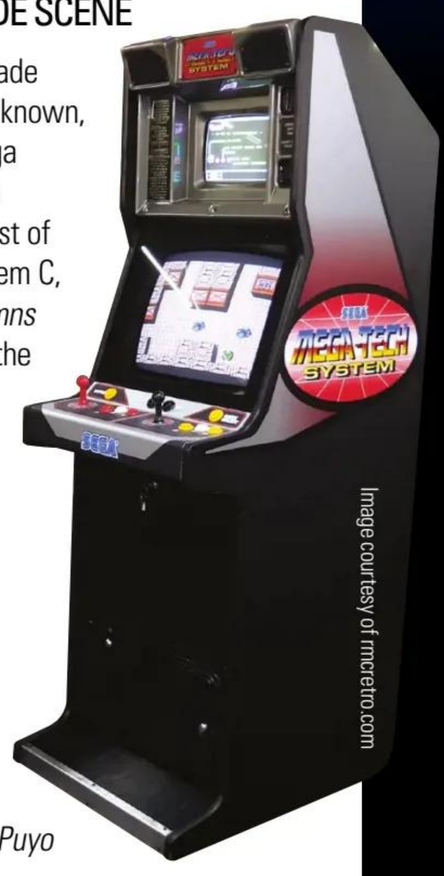


Image courtesy of rmcretro.com

» Visit @RMCRetro on YouTube to see how this cabinet was restored for play at The Cave in Chalford – book a visit at retrocollective.co.uk

The Mega-Tech system was essentially Sega's equivalent to Nintendo's PlayChoice-10, in that it was more of a way to try out home games than a typical arcade system. Software was distributed on cartridges that had almost the same code as their home counterparts – cheats and all – and the PCB had eight slots, allowing for a variety of games in one cabinet. Rather than getting credits and lives as usual, players paid for time on the machine, during which they could try any or all of those games until the timer ran out. A few dozen games were released in this format – notably including some Master System games and the Mega Drive version of *Tetris* that was famously recalled.

The final board was the Mega Play, which was like the Mega-Tech in that it was fundamentally the same as the Mega Drive and supported multiple cartridges – four, rather than eight. Unlike the Mega-Tech, Mega Play games played with standard credits and lives and were usually modified in various ways – typically with the goal of making them more difficult. The Mega Play received relatively little support, but premier Mega Drive titles including *Sonic The Hedgehog*, *Streets Of Rage 2* and *Gunstar Heroes* were brought to the arcade in this way.

» [Arcade] Sega clearly agreed with *Mean Machines Sega*'s "arcade quality" accolade for *Streets Of Rage 2*.

» [Mega Drive] SNK licensed Mega Drive conversions to other publishers, despite tech similarities with the Neo Geo.

» [Mega Drive] Digital Eclipse brought the likes of *Defender* and *Joust* to the console late in its life.

» [Mega Drive] Cartridge size constraints often meant that speech samples were lost in games like *Klax*.

» [Mega Drive] *Bonanza Bros* was a conversion from Sega's less-renowned System 24 arcade board.

» [Mega Drive] *Sunset Riders* is better on the SNES. "To this day, I believe it was done intentionally," says Mauro.

» [Mega Drive] Neo Geo conversion *Super Baseball 2020* was a rare dabble in coin-op action from EA.

once. The only answer was to read them off the CD in real-time during gameplay and that was painful. Every time he morphed the game would just stop for a couple of seconds and it made my toes curl."

In fact, with the exception of the wonderful *Final Fight CD*, the Mega-CD was a bit of a disappointment for arcade fans. Players had high hopes that its sprite-scaling and rotation capabilities would help bring the Super Scaler games home faithfully, but it was not to be as publishers were more interested in FMV. A hardware enhancement that was more successful in its aims was the Sega Virtua Processor – a chip used for polygon generation in the Mega Drive version of *Virtua Racing*. Although noticeably cut back from the arcade original and sold for an eye-watering £70, the conversion did receive acclaim. Plans for a modular version were put into place to enable more 3D games, but instead Sega launched the more powerful 32X which achieved the same goal.

Arcade games were front and centre for the launch of the 32X – the back of the North American packaging even made the decidedly bold claim that its graphics were "as good or better than the arcades". How well the software lived up to those claims depended on what you played. For games that the Mega Drive already handled well, the differences could be very limited – some extra colours here and larger sprites there, maybe better speech, but they still felt like Mega Drive games at heart. Indeed, in the case of *Mortal Kombat II* and *Primal Rage*, they were. "The reason I'm credited for those versions is that they're essentially conversions (re-conversions?) of the Mega Drive games. I didn't work on them directly," David reveals. "The 32X games were programmed by Cameron Sheppard."

While the 32X's sprite-scaling capabilities were potent and its flat-shaded 3D games ran well, such games were falling out of favour in arcades due to the rise of games using texture-mapped 3D – a task better suited to Sega's proper 32-bit console, the Saturn. In its waning years, the ageing Mega Drive got fewer new arcade conversions, with *NBA Hangtime* being a notable exception as Sega's 16-bit machine was the oldest console to receive a conversion. Carl-Henrik, lead programmer on that game at Funcom, has good memories of the project. "We were good friends and we had a lot of fun working on this game. At least one other team member stated it was his favourite project to work on ever, and we got along well with Midway!

"We received everything we needed such as source code, all the original art assets and I think we used fax to ask questions. High Voltage worked on the PlayStation and N64 ports and we received the answers to questions they asked too. Luckily the Midway arcade hardware was a little older at the time so apart from the scaling the machines felt closer. Super Nintendo

"IT WAS HARDER THAN I EXPECTED BECAUSE I ENCOUNTERED MANY TOUGH BUGS TO RESOLVE"
MAURO XAVIER

EXTENDED PLAY

THE MEGA-CD AND 32X OFFERED CONVERSIONS NOT FOUND ON THE STANDARD MACHINE – HERE ARE FIVE WORTH CHECKING OUT

TIME GAL
1992 • WOLF TEAM

The Mega-CD played host to plenty of LaserDisc game conversions, and *Time Gal* is one of the best. While Taito's arcade original did little to expand on the *Dragon's Lair* formula, Wolf Team treated Toei's anime art with care and created a conversion that avoids the add-on's typical grainy video.

MAD DOG MCCREE
1993 • AMERICAN LASER GAMES

What do you get the Mega Drive owner who has everything? Well, *Mad Dog McCree* takes advantage of both the Mega-CD and the Menacer. The Western setting and acting are cheesy and the video transfer from LaserDisc is rough, but it adds some welcome variety to the sparse lightgun library.

STAR WARS ARCADE
1994 • SEGA INTERACTIVE

This 32X launch game is not only the best *Star Wars* experience in the Mega Drive family of consoles, but still the only home port of the Model 1 arcade game. This polygon-pushing showcase lets you take down the Death Star and Super Star Destroyer by yourself or in co-op.

SPACE HARRIER
1994 • RUTUBO GAMES

Sega was criticised for bringing such an old game to the 32X in 1994, but this is a very accurate version of the arcade original. It wipes the floor with *Space Harrier II* in terms of speed and intensity and, like *After Burner Complete*, it showcases the hardware's sprite-scaling power.

VIRTUA FIGHTER
1995 • SEGA CS4

Though it loses plenty of polygonal detail and audio quality compared to its arcade parent, the 32X version of *Virtua Fighter* brings home the gameplay and exquisite animation intact, and even has extra features over the Saturn version. The 32X was already beyond saving, but this conversion is still great.

required more optimisation such as running each team's AI every second frame. Mega Drive did not have any problems running the game," he continues. "The way we ported the source code was a little intricate, but it allowed us to match the original code precisely. We basically ported it line by line. At Funcom we spent a lot of effort on tools to help get the original art working well on Mega Drive and Super Nintendo so that helped out a lot too. The sound guys, Kim Jensen and Geir Tjelta if I remember correctly, were very experienced with the Mega Drive at this stage, and on the Super Nintendo we even had Jeroen Tel converting the music."

» [Mega Drive] *Alien Storm* was a solid conversion of Sega's arcade game, but was rather light on extras.

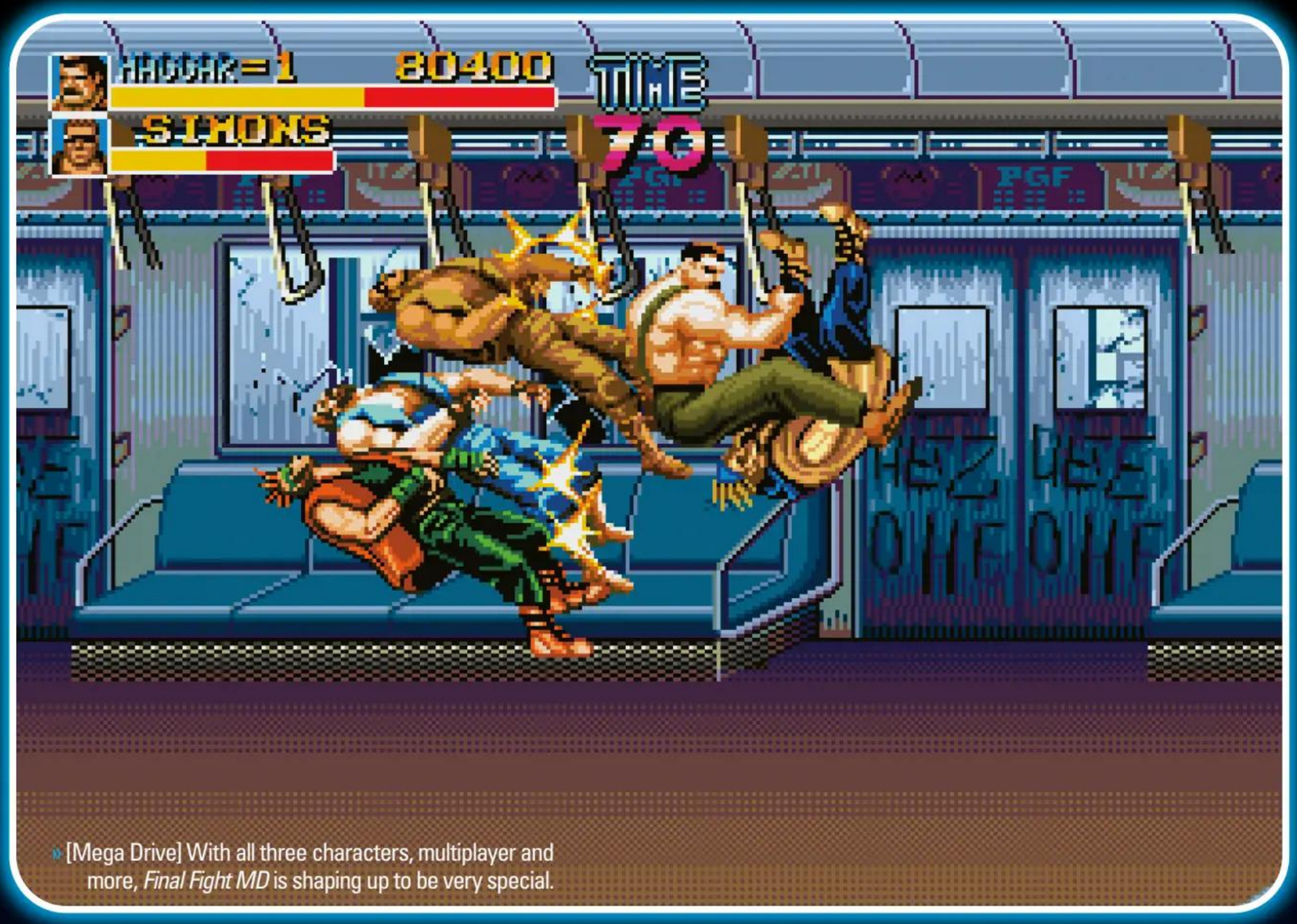
The Mega Drive did also find a role as a home for some early retro releases, such as the compilations *Arcade Classics* and *Williams Arcade's Greatest Hits*, and a conversion of *Frogger* that was the console's final official North American release. That wasn't the end of the story though, thanks to homebrew coders. As well as mods that improve existing conversions, they have blessed the console with brand-new ones of their own. "The modern resurgence of high-quality Mega Drive projects is largely thanks to Stephane Dallongeville's SGDK libraries. Coding in C with fast compile times and modern IDEs, along with an integrated asset pipeline, makes the development process much more efficient and enjoyable," Andrea tells us. He also explains that there are many advantages that today's programmers have. "The ease of testing ROMs in emulators, along with fewer barriers to file distribution, removes many of the limitations that developers faced in the past and even less friction than modern PC/Mac development. Today, even cart production costs are low enough to allow for maximum ROM usage and no need for cut content because of size restrictions." Andrea looked to the Mega Drive when seeking a

» [Mega Drive] *Super Street Fighter II* was the largest Mega Drive cartridge, at a titanic 40Mbit

platform with less restrictions than the Pico-8. "I discovered Pigsy's *Castlevania: Symphony Of The Night* videos and learned about SGDK, which seemed like a great way to progress, especially since I've always loved the Mega Drive." He had previously written a Pico-8 version of *R-Type*, so chose to create *Mega R-Type* – initially as a demo, but now as a full conversion. "Luckily, *R-Type* turned out to be a great fit for the Mega Drive hardware setup, the dual scroll planes and number of sprites are well suited to match the arcade. CPU power seems to be good, considering it's all coded in C and I am not that experienced and at this point there are almost no slowdown," Andrea tells us. "I don't have access to

» [Mega Drive] Limited cartridge capacity could really hamper some games, as *The Punisher* ably demonstrates.

» [Mega Drive] The hardware's limited colour palette really started to show in later games with digitised sprites.



» [Mega Drive] With all three characters, multiplayer and more, *Final Fight MD* is shaping up to be very special.

▶ the original source code, so I'm taking the old-school route of playing it on MAME and studying YouTube footage to try to reverse-engineer the gameplay," says Andrea, who converted the graphics himself. "The music, however, is all original, composed by Cyberdeous and CLBN in Deflemask."

auro Xavier is working on *Final Fight MD*, a cartridge version of Capcom's beat-'em-up. "It was a proposal from Paulo (Master Linkuei), and I thought it would be interesting to take on the challenge," he says, explaining the project's origin. "Honestly, it was harder than I expected because I encountered many tough bugs to resolve. However, the process helped me better understand the console's architecture." Like Andrea, he has written brand-new source code based on observation of the original game. "As for graphics, about 90% of the sprites were taken from the arcade version and adjusted pixel by pixel for proportion. The other 10% came from the Mega-CD version, where I made adjustments to remove dithering," he explains. Backgrounds likewise consist of tweaked assets from both versions. "One aspect I appreciate about *Final Fight* for the Mega Drive is the music. Edmo Caldas is a

MODERN MARVELS

FIVE FANTASTIC CONVERSIONS FROM THE 21ST CENTURY

SHINOBI
TRYPHON

This conversion of the first game in Sega's ninja action series has been in development since at least 2015, and while it's still incomplete, what's there feels exceptionally authentic. Work is ongoing, with the developer Tryphon recently displaying progress in implementing the first two boss fights.

DARIUS: EXTRA VERSION
HIDECADE/M2

While the Mega Drive can't replicate the ultra-wide display of an original *Darius* cabinet, it does a great job with the gameplay within its own constraints. First released on the Mega Drive Mini in 2019, the game eventually received a Taito-endorsed cartridge release via Strictly Limited Games.

FANTASY ZONE
HIDECADE/M2

Sega's System 16 cute-'em-up seems to be a favourite at M2, and this faithful conversion is exclusive to the Mega Drive Mini II. As well as a Time Attack mode, a new Super Easy mode gives players loads of money and a life bar, to make the challenge less intense.

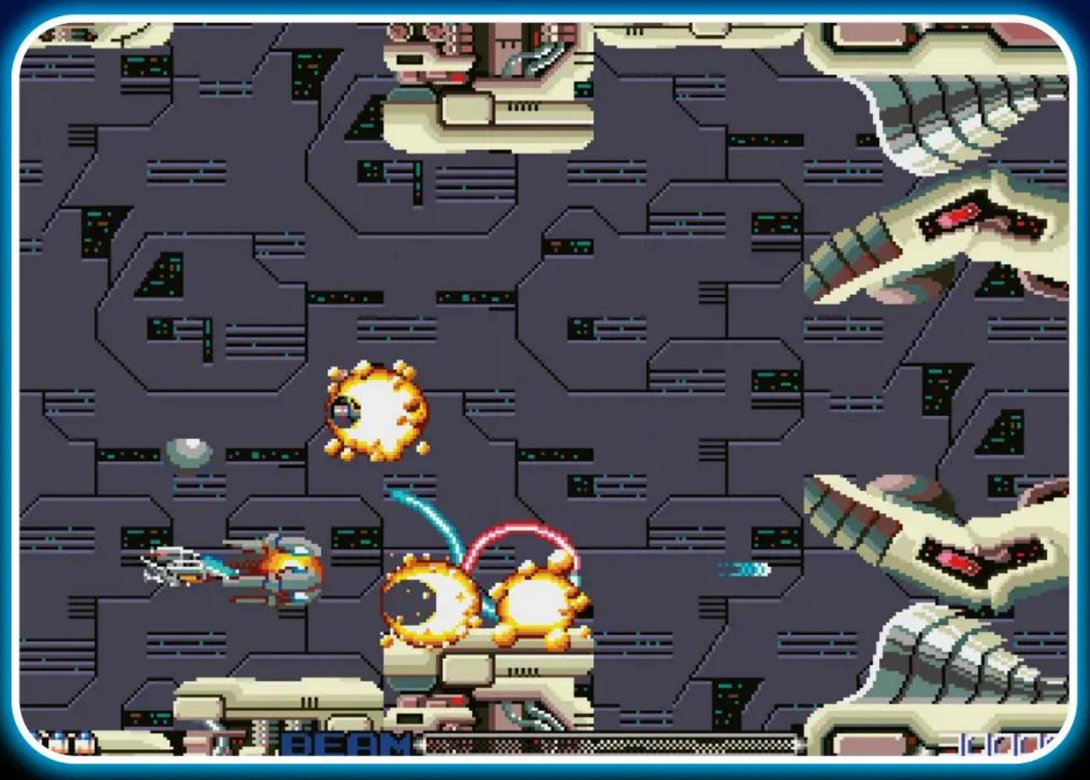
REAL BOUT FATAL FURY GENESIS
RHEOGAMER BR

This adaptation of *Real Bout Fatal Fury Special* looks and feels close to the Neo Geo original. The trade-off is that there are only nine individual characters in the 40Mbit ROM, but five EX versions, a Survivor mode and a list of Conquests should keep you busy.

WINDJAMMERS
FORMAT_C

The public release of this Neo Geo conversion is quite old now, but progress updates from format_c and the team have been fairly regular. As part of the lengthy development process, the developers are going beyond Data East's classic multiplayer design by adding brand-new courts and characters.

» [Mega Drive] *Vigilante* is in an early state, but so far it's clear that the visuals have been nailed.



» [Mega Drive] *Mega R-Type* is great so far, and even includes the Master System's exclusive stage.

talented composer and musician, and his arrangements gave the tracks a special touch without losing their essence," Mauro tells us. Although still in progress, it's already a highly polished conversion that looks set to eclipse the Mega-CD version.

Fabrice was initially put off of SGDK because of bad high school memories of C programming. "What got me to step into SGDK was the help of Vetea, the creator of *Papi Commando*," he explains. "He was coding the Mega Drive *Metal Slug* demo at the time, and he very kindly gave me the source code. That's been a very precious help and I decided to learn C." Now working on a conversion of *Vigilante*, Fabrice is also going by observation. He ripped the graphics for the game via emulation. "All five levels are identical to the arcade, apart from level one. That one is too rich visually to fit into VRAM, even by streaming tiles, so I had to do some minor cut-downs. For the sprites I have been very, very lucky. The colour adaptation has been made by the mighty Pyron, an artist very well known in the Mega Drive homebrew scene. He kindly proposed to do the colour conversion for the sprites, and boy, how beautiful it is," he enthuses. "The music is being remade by Vector Orbitex. I don't know how he does it, but the tunes are quite difficult to distinguish from the arcade originals. The sound quality is amazing."

"WHAT GOT ME TO STEP INTO SGDK WAS THE HELP OF VETEA, THE CREATOR OF PAPI COMMANDO"
FABRICE FERNANDEZ

The continued appetite for arcade conversions among Mega Drive fans has even stimulated officially licensed releases in recent years. At the most basic end, you have Retro-Bit manufacturing new cartridge runs of classic conversions like *Grind Stormer* and *Slap Fight MD*. Then there are the Mega Drive Mini consoles, which hosted brand-new official versions of games including *Tetris*, *Fantasy Zone*, *Spatter* and *Puyo Puyo Sun*, and even a version of *Space Harrier* that simulates a fantasy version of the Mega Drive with sprite scaling. The conversion of *Darius* that appeared on the original machine even received a cartridge release, licensed by Taito.

There may be far more to the Mega Drive library than its arcade games, and there's no denying that the PC Engine and SNES also had their share of great conversions. However, it's fair to say that more than either of those machines, the Mega Drive's accomplishments were built upon a foundation of arcade excellence. Fire up any of the brilliant conversions we've highlighted, and the differences from the arcade originals quickly fade into insignificance – what matters is that the gameplay shines through and the spirit is intact. If you've ever found yourself with a fistful of 10p coins and a dilemma as to which machine you'll take them to first, the arcade soul of this machine is as irresistibly attractive as it always was. ✱

» [Mega Drive] *Virtua Fighter 2* was far too ambitious for its own good, and came off badly.

» [Mega Drive] *Frogger* arrived in 1998, which seems like an unfathomable publishing choice in hindsight.

A TRIBUTE TO team17®

FORMED AFTER A MERGER BETWEEN SWEDISH DEVELOPER TEAM 7 AND UK PUBLISHER 17-BIT SOFTWARE, TEAM17 HELPED DEFINE AMIGA GAMING WITH ALIEN BREED, SUPERFROG AND WORMS. FOUNDER ANDREAS TADIĆ REVIEWS THE FIRM'S GREATEST AMIGA RELEASES

WORDS BY RORY MILNE

ANDREAS TADIĆ

A member of the Swedish Amiga demoscene, Andreas first worked on *Miami Chase* for Codemasters as part of Team 7. He then became the lead coder for Team17, where his Amiga hits included *Project-X*, *Alien Breed* and *Superfrog*. He's now the senior software engineer at Unity Technologies in Stockholm.

The product of a union between the British shareware publisher 17-Bit Software and the Swedish developer Team 7, Team17 built on the successes of the two Amiga-focussed groups. The studio graced the system in 1991 with its slick one-on-one brawler *Full Contact*, and in the same year it won plaudits for its top-down Amiga shooter *Alien Breed*, which received a chart-topping special edition the next year. 1992 also saw Team17 channel *R-Type* on Commodore's computer with its scrolling shoot-'em-up *Project-X*, and pay homage to *Strider* on the 16-bit system with its frenetic action title *Assassin*.

The firm attracted yet more praise in the following year, both for its *Sonic/Mario* mash-up *Superfrog* and the intense sequel *Alien Breed II*, each of which originated on the Amiga. In 1994, the firm ventured beyond in-house projects by re-releasing Kaiko's Amiga exclusive shooter *Apidya* and publishing Bloodhouse's Amiga *Asteroids* homage *Super Stardust*.

Despite the popularity of these two releases, Team17's humourous 1995 strategy title *Worms* entirely eclipsed its earlier games and won the hearts of Amiga gamers. During that same year, *Alien Breed 3D* wowed that same scene when it reimagined the original blaster as a first-person shooter. By 1996, the Amiga's star was fading fast, but Team17 still gave it a proper send off with its technically impressive follow-up, *Alien Breed 3D 2*.

In the intervening years, the studio has favoured other platforms, but its releases for them have included sequels to Amiga originals such as *Alien Breed*, *Superfrog* and of course *Worms*. ✱

FULL CONTACT

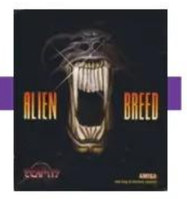
AMIGA • 1991

As fast and slick as an Eighties arcade brawler with cool moves and bonus rounds culled from Eighties computer fighting games, *Full Contact* impresses with fluid animation and sumptuous backdrops. A rotoscoped title screen and an eclectic field of ever more challenging opponents help to elevate Team17's debut even further.

ANDREAS' MEMORIES

Full Contact was influenced by good old fighting games on the Commodore 64, like *Yie Ar Kung-Fu* and *International Karate*. I loved those, and so did my artist Rico Holmes. In comparison with what we did later it wasn't all that complicated. I took graphics from our first game *Miami Chase* and some code, but we could take a lot of the performance crippling stuff out because it wasn't vertically scrolling."

ALIEN BREED



AMIGA • 1991

The Amiga excels at top-down shooters, and Team17's alien action title is one of the best. Ammo and health are collected or bought at terminals, while keys have to be used intelligently to avoid getting locked out of certain areas.

ANDREAS' MEMORIES

The limited ammo and collectable credits were to do with playability, because you had to run around and look for ammo to progress. There were certainly discussions about just throwing it all out there, but I think what we did helped the pace of the game. It was still relatively generous with ammo, but you *could* run out and you had to keep that in mind."

PROJECT-X

AMIGA • 1992

Famous for its unforgiving challenge, *Project-X* rewards you with power-ups for destroying entire waves of enemies. If you fail to do this for long then coping with subsequent waves becomes tricky, and if you lose a life you lose power-ups, meaning there's precious little room for error.

ANDREAS' MEMORIES

If you looked at other games, their enemy attack patterns were pretty mathematical. They tended to follow sine waves or circles. We wanted to move away from that, and try to make something a little bit different. The attacks were meant to be a bit of a surprise, and apparently they were! Regarding the fast-scrolling levels, I think we just wanted bonus levels, and that was what they were. They were all about collecting bonuses and coming out better prepared for the next level."

TOP TACTICS

TIPS FOR TACKLING THE TOUGH SHOOTER

GREAT GUNS

The forward-facing guns in *Project-X* can be fairly rapidly enhanced by picking up upgrades, which makes them invaluable given the game's steep difficulty curve.

WEAPONS OF CHOICE

Project-X's collectable armaments include front-fitted Plasma, Magma and Lazer upgrades plus Sideshots, homing missiles and screen-clearing blasts.

USEFUL PICK-UPS

In order to make your mission slightly less challenging, *Project-X* provides you with power-ups to speed up your craft and temporarily give it invulnerability.

HELPING HAND

To Team17's credit, the early stages of *Project-X* cut you a little slack, in that if you lose all your lives on them you can resume from the level you died on.

MAYOR STRATEGIES

The bosses in *Project-X* take many hits to put down but they're slow and predictable, so avoid their occasional attacks and otherwise pepper them with ammo.

ASSASSIN

AMIGA • 1992

Apart from its hero's stylings and his acrobatic abilities, *Assassin* has little in common with Capcom's coin-op *Strider*, despite frequent comparisons between the two games. The titular assassin is able to climb vertical surfaces, and sometimes finds cause to traverse high-up vertical extrusions hand-over-hand, but these talents aside he lacks the swathe of abilities possessed by Strider Hiryu. In respect of *Assassin*'s level designs and layouts, the game shares more with *Turrican* than Capcom's arcade game, although with concessions made to accommodate its hero's aforementioned climbing abilities. The similarities with *Turrican* stop there, however, as *Assassin*'s protagonist has a boomerang for a weapon until he upgrades it, and even then the Team17 release never becomes a shooter. Instead, *Assassin* is its own game, one where far better armed opponents have to be stealthily dispatched and fiendish platforming challenges have to be tackled.

CARDIAXX

AMIGA • 1993

Originally debuting in 1991, this stylish re-release from Team17 is far from lacking substance. *Cardiaxx* is best described as a hybrid of *Defender* and *R-Type*, in that you pilot your ship left and right through confined stages. Waves of enemies have to be taken out, asteroid showers have to be navigated through or picked off, and bosses have to be taken care of. A unique mechanic sees a disembodied voice instructing you to head left or right to your upcoming challenge, and until it's completed you can't progress to the next. This is important to know, as there's a time limit to finish each level, and you can't do that without beating all of its tests of shooting skills and manoeuvrability. Each stage has a metallic or organic motif, and is followed by an outer-space battle.

F17 CHALLENGE

AMIGA • 1993

The first into-the-screen racer released by Team17, *F17 Challenge* follows the arcade approach to racing games rather than attempting to be a realistic sim. That's not to say that it doesn't reflect reality at all. The weather might always be sunny regardless of where you are in the world, but the tracks you race on have appropriate surroundings for the country that they're located in. If you hit another driver you spin out, meaning the classic coin-op move of using other vehicles to get around corners won't work. Your car accrues damage that can ultimately require a pit-stop, and in the game's base mode you accumulate points like in the real sport. These few concessions aside, *F17 Challenge* provides a fun arcade-like experience with just enough depth to ensure replay value.

FORMULA FUN THE 3D RACER'S TOP FEATURES

MARVELLOUS MODES

In its standard mode, you race a season and gain points in each race depending on where you finish. In the game's arcade mode, you need top three finishing positions to keep progressing.

DIFFERING DIFFICULTIES

There are three difficulty levels on offer, and some modes allow you to choose how many laps you race. The more you attempt the more chance you have of wrecking your car.

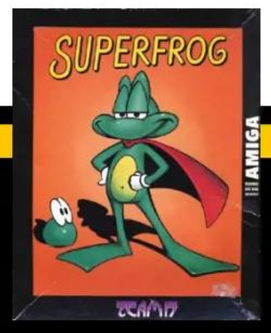
CAR CHOICES

In each of *F17 Challenge*'s races you attempt to come first in a field of 22 cars, you have a choice of driving vehicles built by Ferrari, Williams, McLaren and Benetton.

WHAT'S THE DAMAGE?

Mounting kerbs and colliding with trackside barriers or other cars incurs damage, and if you don't make a pit-stop when your damage meter nears 100% it can end your race.

SUPERFROG



AMIGA, CD32 • 1993

■ Although you dispatch foes by jumping on them like Mario and run along undulating routes at top speed like Sonic, *Superfrog* is otherwise a traditional platformer, where you complete each level by collecting a set number of coins.

ANDREAS' MEMORIES

Rico and I both loved *Sonic* because it was so fast and so slick, and we thought that because we had these scrolling routines that I could check how far I could stretch them. So I optimised them by using the CPU together with the blitter in weird and wonderful ways, and we put something together with fast scrolling. We didn't want to do anything that was even slightly similar to *Sonic*, or Sega would have screamed like all hell! But we also played *Super Mario*, and thought that was super playable, so we tried to reach for something in-between."

SUPERB SETTINGS THE ECLECTIC ENVIRONMENTS OF TEAM17'S POLISHED PLATFORMER

FOREST

■ The most *Sonic*-like of *Superfrog*'s stages has you sprinting along hills and valleys, while avoiding deadly creatures and platforming in the branches of trees.

WINTER

■ Expect slippery ice surfaces and aggressive penguins when you tackle the winter level in *Superfrog*. Other dangers include falling blocks of ice and icebergs.

CASTLE

■ The castle level in *Superfrog* is defined by traps and hazards, like burning oil, spiked metal balls on chains and platforms that appear and disappear in turn.

SPACE

■ In space, no one can hear you ribbit! Thankfully you get power-ups for dispatching waves of enemies in this *Project-X* inspired side-scrolling shooter stage.

CIRCUS

■ *Superfrog*'s circus level has all the fun of a deadly fair! You get shot at by gloved hands, attacked by killer goldfish and sucked through a network of pipes.

BODY BLOWS

AMIGA • 1993

■ Team17's answer to *Street Fighter II* cleverly adapts the six-button coin-op's controls to work with a one-button joystick. The colourful cast in *Body Blows* includes a street punk, a ninja, a wrestler, a boxer and a polite businessman named Mike!

ANDREAS' MEMORIES

I only supported the coder for *Body Blows*. That was actually our first proper game that wasn't done by me and Rico. Danny Burke came in with the idea, and then I helped out somewhat with the code. It was his first game, and it seemed to go down pretty well. I mean, it was all that you could do with a one-button joystick. It was typical of Martyn getting involved, in terms of how we could make that work. I don't know where having a fighter who was a businessman called Mike came from, but the fact was that the businessman who started Team17 was Mick Robinson. So Mick/Mike, I don't know. That's just a theory, I have no idea really."

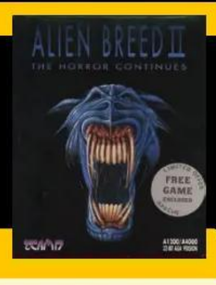
QWAK

AMIGA • 1993

■ Jamie Woodhouse's *Qwak* is a sequel to his earlier BBC Micro title of the same name, although the Team17 Amiga release has many more features. The follow-up's single-screen levels require you to collect all their gold keys in order to unlock an exit to the next stage. You do this against the clock, but once the timer hits zero you can continue collecting, albeit with the additional threat of deadly spikes falling from the top of the screen. Other pick-ups include fruit and gems that contribute to your score, and silver keys that unlock gates that once unlocked give you access to power-ups. On each stage, *Qwak* sets all manner of strange creatures against you, which you can take out by chucking eggs at them. After clearing each block of themed levels, there are groups of larger foes to take down that act as the game's bosses.

ALIEN BREED II: THE HORROR CONTINUES

AMIGA • 1993



■ Rather than sneaking around picking off aliens like in the original, *Alien Breed II* has you engaging in intense firefights, some of which involve armed aliens. Another innovation is that you can play as one of four characters with different equipment.

ANDREAS' MEMORIES

We thought we were done with *Alien Breed*, and we wanted to do *Superfrog* as something different, but then after that we really wanted to go back and do *Alien Breed II*. *Alien Breed* as a brand was totally inspired by the film *Alien*. Rico and I were big fans. We also loved *Gauntlet*, so using that as a foundation for making a game of the film *Alien* was just, 'Yeah!' We did a lot of new stuff with *Alien Breed II*, and that took a lot of coding. I learned a lot by doing *Superfrog*, and *Alien Breed II* was pretty much built on top of its code rather than on the original *Alien Breed* code, because technically it had advanced so much further that it made sense. It meant that we could have more objects on the screen and more flashy sprites."

AWESOME ATTRIBUTES KEY ASPECTS OF THE TOP-DOWN ALIEN SEQUEL

INTERESTING INFLUENCES

■ Although *Alien Breed II* mirrors the frenetic action in *Aliens*, the inspiration for this actually came from it being technically possible.

COOL COLLECTIBLES

■ The *Alien Breed* follow-up takes pick-ups to a new level, in that large dumps of health and ammo are scattered around its stages.

CHARACTER STUDY

■ The heroes of *Alien Breed II* each start the game with useful items, including machine guns, Triple Lasers, scanners, keys and credits.

AMAZING ARMAMENTS

■ The weapons in Team17's sequel have three levels of destructiveness. Homing missiles, flame throwers and grenades are good options.

WORTHY OPPONENTS

■ Not only does *Alien Breed II* have more aliens than the original, but its foes hide from you, plan surprise attacks and can even use guns against you.

OVERDRIVE

AMIGA • 1993

■ One look at *Overdrive* tells you that it takes its lead from *Micro Machines*, but given how much fun the top-down racer is that's no bad thing. As with the Codemasters hit, *Overdrive* features colourful characters driving different specs of vehicles, from 4x4s and beach buggies to supercars and F1 cars. There's no toy car element or household and garden environments; instead you race around cities, winter courses, dirt tracks and Grand Prix circuits. There's an emphasis on collecting power-ups as you drive around, and bagging these can make the difference between getting first or second place. As well as non-skid tyres, extra fuel, turbos and better steering, you can pick up a Superman symbol that stops you using fuel at all as you race around. There are also dollar signs to collect, which give you funds to bolster your winnings in each race. You need this money to pay for the entry fees for subsequent events, so scooping up dollars is a winning strategy. Last but not least, the surfaces you race on have an effect on your vehicle's performance.

APIDYA

AMIGA • 1994

■ Swap out *Apidya*'s wildlife-themed hero, enemies and environments for spaceships, aliens and space, and it becomes obvious that Team17's re-release of the 1992 shooter owes a debt to the classic coin-op *Gradius*. In terms of its visual design, however, the side-scrolling shooter is arguably unique. Its hero is a wasp on a mission that takes it through the likes of a garden, a pond and a sewer. Power-ups become available when you dispatch entire waves of foes.

ANDREAS' MEMORIES

The art style and characters in *Apidya* were completely different from *Project-X*. We went for something more arcadey; we obviously got our ideas from *R-Type*. I played *Apidya* to try out a few things, but I can't really compare it to *Project-X* because I didn't play it enough. It was one of what became many external products that we didn't do in-house. Martyn was extending Team17's range of published games. So rather than try to do everything in-house, and live like that, we could buy games reasonably cheaply. It went OK, I think. We also published *F17 Challenge*, and a few other games from external developers."

SUPER STARDUST

AMIGA, CD32 • 1994

To understand what *Super Stardust* is, just imagine Atari's *Asteroids* with rocks requiring more or less shots to destroy depending on their colour, waves of alien ships and end-of-section bosses. The Team17 release also boasts impressive 3D stages.

ANDREAS' MEMORIES

I did play *Super Stardust* quite a bit. I liked it because it was technically really impressive. It was a Finnish team that did that, and we got on really well with them. I think the collaboration went great. I played it when it came out, and I'd played it a few times before then, because Martyn wanted to know what I thought about it. I liked it, although I honestly haven't got that much in-depth memory of it. It certainly made a name for itself, you have to say. The group that made it did some really nice stuff. I had made a few games by that time, but as a coder I was wondering how they did some things. Then it would dawn on me what they had done."

POINTS OF DIFFERENCE

HOWTHEASTEROIDSHOMAGEDIFFERENTIATESITSELF

BEAUTIFUL BACKDROPS

The ray-tracing techniques used to render *Super Stardust*'s backgrounds gives the game stunning vistas depicting alien worlds, epic star bases and vast cities floating in space.

MIGHTY MAYORS

In *Super Stardust*, the bosses are giant metal alien constructs with heavy artillery and dense armour. They home in on your position then pause, allowing you to get some shots in.

PERFECT PICK-UPS

In order to get access to better firearms you first have to collect tokens. Once secured, you can activate a Three-Way Shot, a Bouncer Shot, Plasma, Flamer, Burster or traditional missiles.

SENSATIONAL SUBGAMES

Aside from periodic into-the-screen 3D warp sections, there are levels that channel gravity games like *Thrust*, where you collect power-ups while trying not to destroy your ship.

ALIEN BREED: TOWER ASSAULT

AMIGA, CD32 • 1994

Rather than reinvent the wheel, *Alien Breed: Tower Assault* delivers more of the same top-down alien blasting that made the earlier games in the series so popular. That's not to say that it doesn't have anything new to offer, of course, and it also has refinements of the series formula that make it a better game than any of its predecessors. In terms of fresh mechanics, *Tower Assault* introduces a Retreat mechanic, where you can switch to shooting your weapon in the direction that you're running away from. *Tower Assault* also has a novel level structure, in so much as there are multiple exits to other areas from each stage, meaning each playthrough of the game will most likely be very different. The most effective tweak to the *Alien Breed* template comes with *Tower Assault*'s difficulty level, which is somewhere between the first two games. Its immersive sound effects are equally noteworthy.

ARCADE POOL

AMIGA, CD32 • 1994

For those that have never played pool, the rules are simple: pot all of the balls of your colour and then pot the 8-ball before your opponent does. With Team17's *Arcade Pool*, as with the real thing, the attraction lies in working out the angle and strength to hit the cue ball so that it has a fair chance of potting the ball you want it to while not benefitting your rival if it should fail to do so. In this respect, *Arcade Pool* may not mirror real-world physics 100%, but more importantly it allows a complete novice to make progress without too much practice. That said, if you're a pool whizz then the game satisfactorily simulates the outcome of a shot in a real game of pool. Besides AI players of variable skill and a two-player mode, there are challenges to clear the table without failing to pot more than three times and to clear the table in the quickest time possible.

ALIEN BREED 3D

AMIGA, CD32 • 1995

Just coaxing a FPS out of the Amiga is praiseworthy enough, but *Alien Breed 3D* also plays at least as well as *Doom*. It also respects the *Alien Breed* titles that it emulates with its alien and robotic foes, resource management and immersive atmosphere.

ANDREAS' MEMORIES

When *Alien Breed 3D* came out I was only really playing arcade games or games that moved at 50Hz, but it was a pretty new concept. I was never into *Doom* or anything like that in the beginning. It was only later on when the graphics got better and you actually got 50Hz that those types of game turned into something that was really responsive. Then they became interesting. They weren't really there around the time of *Alien Breed 3D*, but I have to say that it took a technical genius to pull off what Andy Clitheroe did with it. I couldn't be less than honoured that he made it. It was pretty cool."

WORMS

AMIGA, CD32 • 1995

Andy Davidson's turn-based strategy hit went on to guarantee Team17's future thanks to its compelling gameplay and silly premise. Taking control of a team of four worms, your mission is to use over-the-top weapons to destroy a quartet of enemies.

ANDREAS' MEMORIES

I don't think there was that much luck to *Worm*'s design; it was all very well thought out. Where we were lucky was with the timing, in that at the time people who would play those kinds of games had an Amiga. People at that time also liked games with a sense of humour, and *Worms* was all humour. Then there was the fact that it worked so well with two or more players. The whole idea was so beautifully simple, and games with that simplicity are the ones that are groundbreaking. The first version we ever saw was like *Battleships* but with worms! So we thought we had to do something with that."

TOOLS OF WAR THE OVER-THE-TOP WEAPONS ON OFFER IN WORMS

BAZOOKA
This popular armament packs a heck of a punch, but you have to consider gravity and the speed and direction that the wind is blowing.

GRENADE
These cause 50 points of damage like a bazooka and aren't affected by wind, but can miss their mark due to bouncing around the floor.

FIRE PUNCH
A versatile option that lets you punch opponents into water, cut through landscapes to reach rivals and move weapon crates.

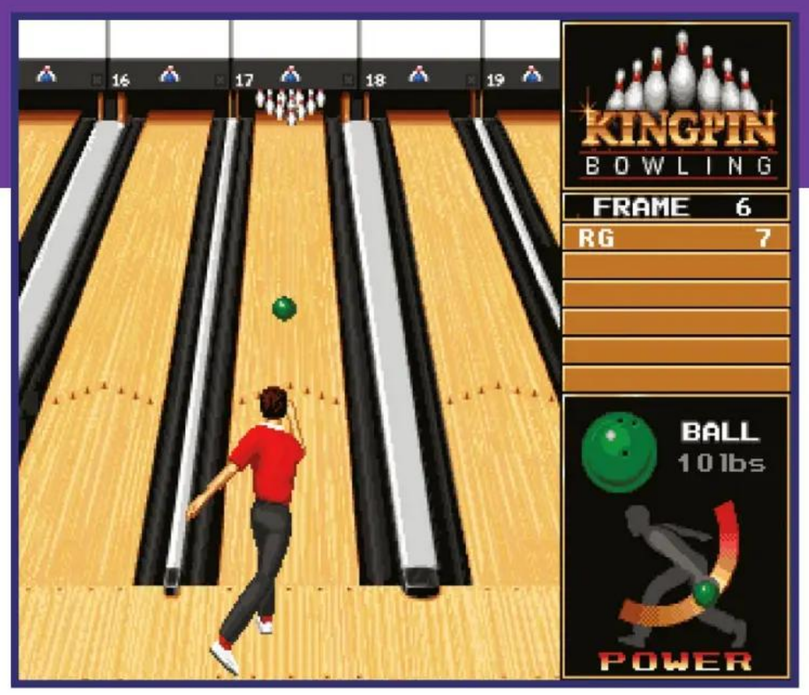
DYNAMITE
Capable of inflicting major damage to enemies, dynamite has to be run away from once lit in order to escape its blast area!

AIRSTRIKE
Devastating if skillfully employed, an airstrike is the last word in worm annihilation and can eradicate an entire squadron.

ATR: ALL TERRAIN RACING

AMIGA • 1995

Although considered a spiritual successor to *Overdrive*, *ATR: All Terrain Racing* was actually developed in-house by Team17, unlike *Overdrive*, which was the work of Psionic Systems. What the two games do have in common is that both are top-down racers in the style of *Micro Machines*, but *ATR* differentiates itself in a number of ways. You earn money by doing well in races, just like in *Overdrive*, but instead of spending this on entry fees for subsequent races you invest in upgrades for your vehicle. *ATR* also has temporary power-ups that you pick-up during races, and in its two-player Battle mode these can include mines and missiles, providing you enable them pre-game. Regardless of if weapons are made available or not in this mode, you score points for leaving your sole opponent so far behind you that they disappear off the screen, with the winner being the competitor who has the most points at the end of a race. There's no combat in *ATR*'s solo offering, with its challenge instead being to finish in a certain position or higher in order to proceed to the next race.



KINGPIN: ARCADE SPORTS BOWLING

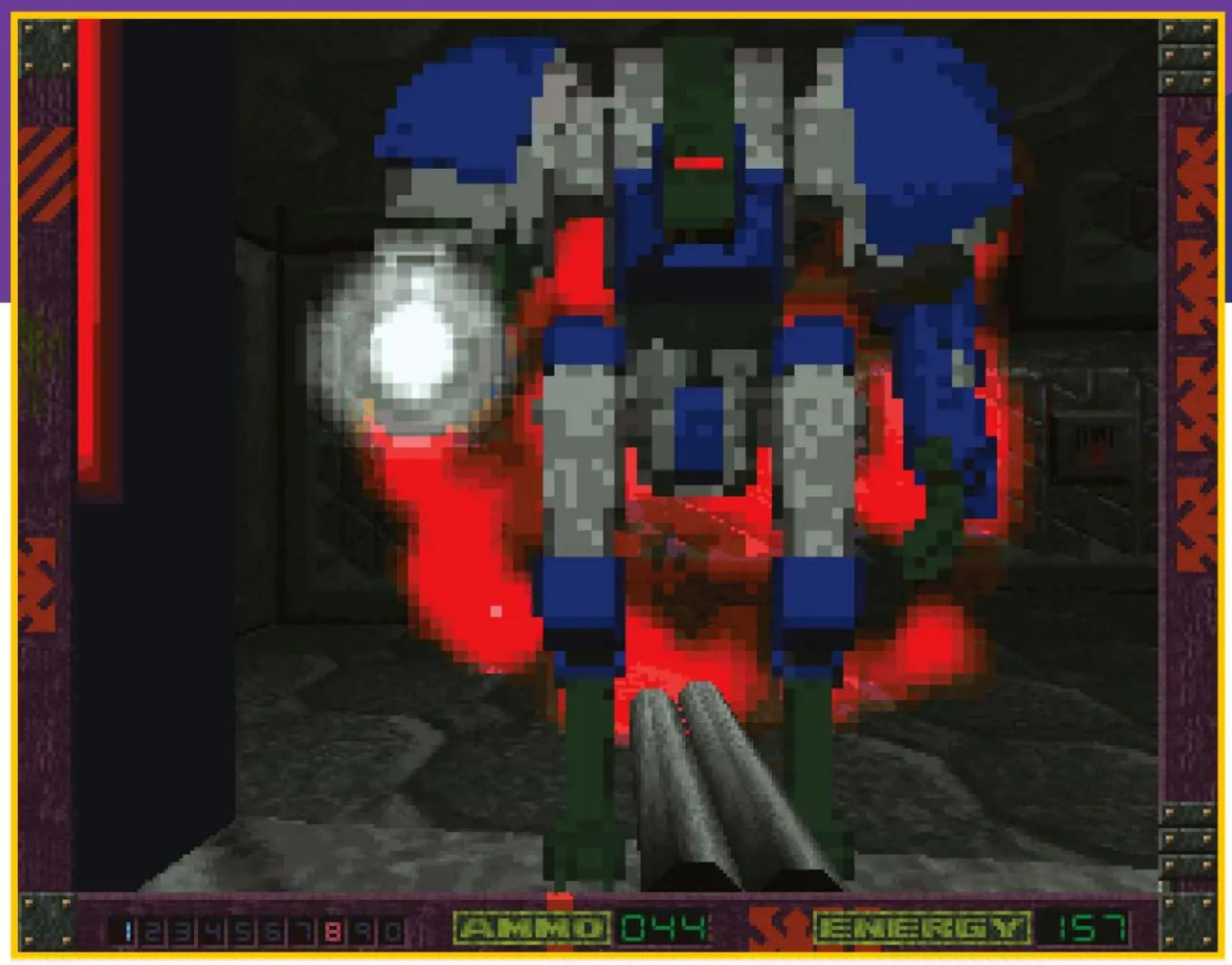
AMIGA, CD32 • 1995

■ For anyone with a passing interest in ten-pin bowling, *Kingpin: Arcade Sports Bowling* is about as good as an Amiga adaptation of the sport could reasonably be. Its gameplay, especially in multiplayer mode, is also enough of a draw to attract those who would do anything to avoid visiting a bowling alley in real life. For the uninitiated, knocking down all the pins on your first attempt is called a strike, and knocking them all down across two attempts is called a spare, with strikes scoring you more points than spares. In *Kingpin*, you choose the weight of ball you want to bowl, position your virtual bowler, decide on the strength of their shot and then specify where they should aim the ball by stopping a gauge that speeds from left to right at just the right moment. The skill required by aiming the ball is really where the crux of *Kingpin*'s appeal lies, much like it is in real-life bowling.

THE SPERIS LEGACY

AMIGA, CD32 • 1996

■ Due credit should go to Binary Emotions for developing *The Speris Legacy* and to Team17 for publishing it, as prior to its release a *Zelda*-type game for the Amiga hadn't been attempted. Given that the Amiga 1200 and CD32 only fell short of the capabilities of the SNES in a few areas, this seems to have been an oversight, so it's only fair that Amiga gamers got to experience something akin to Link's adventures for themselves. In *Speris*, the journey is at least as important as the destination. Speaking to friendly NPCs gives you clues about what to do next and how to do it, whereas interactions with hostile NPCs requires combat. You can claim gems from fallen foes if you beat them, and you can use these to buy weapons and other useful items in shops. How you use these useful items is for you to work out, and the same applies to how you interact with environmental features, but this makes the moments where you make progress all the more sweet.

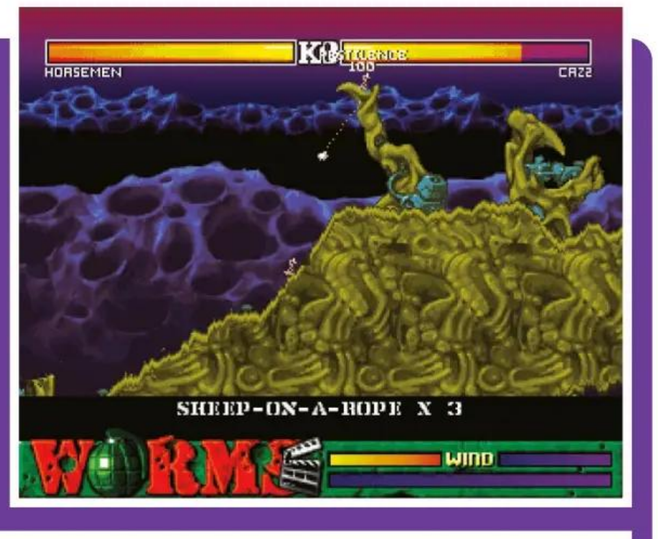


ALIEN BREED 3D 2: THE KILLING GROUNDS

AMIGA, CD32 • 1996

■ Providing you have a powerful enough Amiga, *Alien Breed 3D 2: The Killing Grounds* knocks the spots off its predecessor. The sequel has far higher-resolution graphics with lighting effects that give it an atmosphere that could never have been achieved within the technical restraints of the original. The immersion created by *The Killing Grounds*' visuals is only amplified by the haunting sounds of the aliens and mechanoids that prowl its dimly lit labyrinthine levels. The follow-up's ambient pulse of a soundtrack reinforces the primal fear generated by its wailing monsters, and of course with it being a first-person shooter you have ample means to send them to their graves. Everything from shotguns to rocket launchers are made available to you, and unlike some FPS titles where you exclusively use your favourite armament, in *Killing Grounds* you have to select the most suitable weapon for the task at hand. The rocket launcher, for example, causes devastation whenever in use, but its sheer size means that it all but blocks your view. So it's really only a sensible option for taking out lone bosses, and this clever approach to weapon design adds strategy to the game's offering.

VARIANTS AND OBSCURE RELEASES



TEAM17'S SPECIAL EDITIONS AND MORE

■ The new levels in *Alien Breed: Special Edition 92* secured it 33 weeks in the charts, whereas the chopper shooter *Apache* came free with major Team17 releases. *Body Blows Galactic* is *Body Blows* with some new fighters and locations; *Ultimate Body Blows* is a compilation of the aforementioned brawlers. *Assassin: Special Edition* swaps the hero's boomerang for a laser, *Arcade Snooker* is *Arcade Pool* with different rules and balls, and *Worms: The Director's Cut* has new weapons and a level editor. Finally, the Amiga version of Team17's PC adventure *Nightlong: Union City Conspiracy* was ported and published by third parties.

CAPCOM'S GREATEST FIGHTING GAMES

WORDS BY NICK THORPE

IN THE EARLY NINETIES, CAPCOM TURNED ONE-ON-ONE COMBAT INTO AN ARCADE PHENOMENON, AND IT TOOK A POSITION OF LEADERSHIP IN THE FIGHTING GENRE THAT IT MAINTAINS TO THIS DAY. JOIN US FOR A LOOK BACK AT THE COMPANY'S WORK IN THE FIELD OF FISTICUFFS, AS WE GIVE OUT AWARDS TO THE BEST AND BRIGHTEST OF ITS GAMES

LIFETIME ACHIEVEMENT AWARD

STREET FIGHTER II

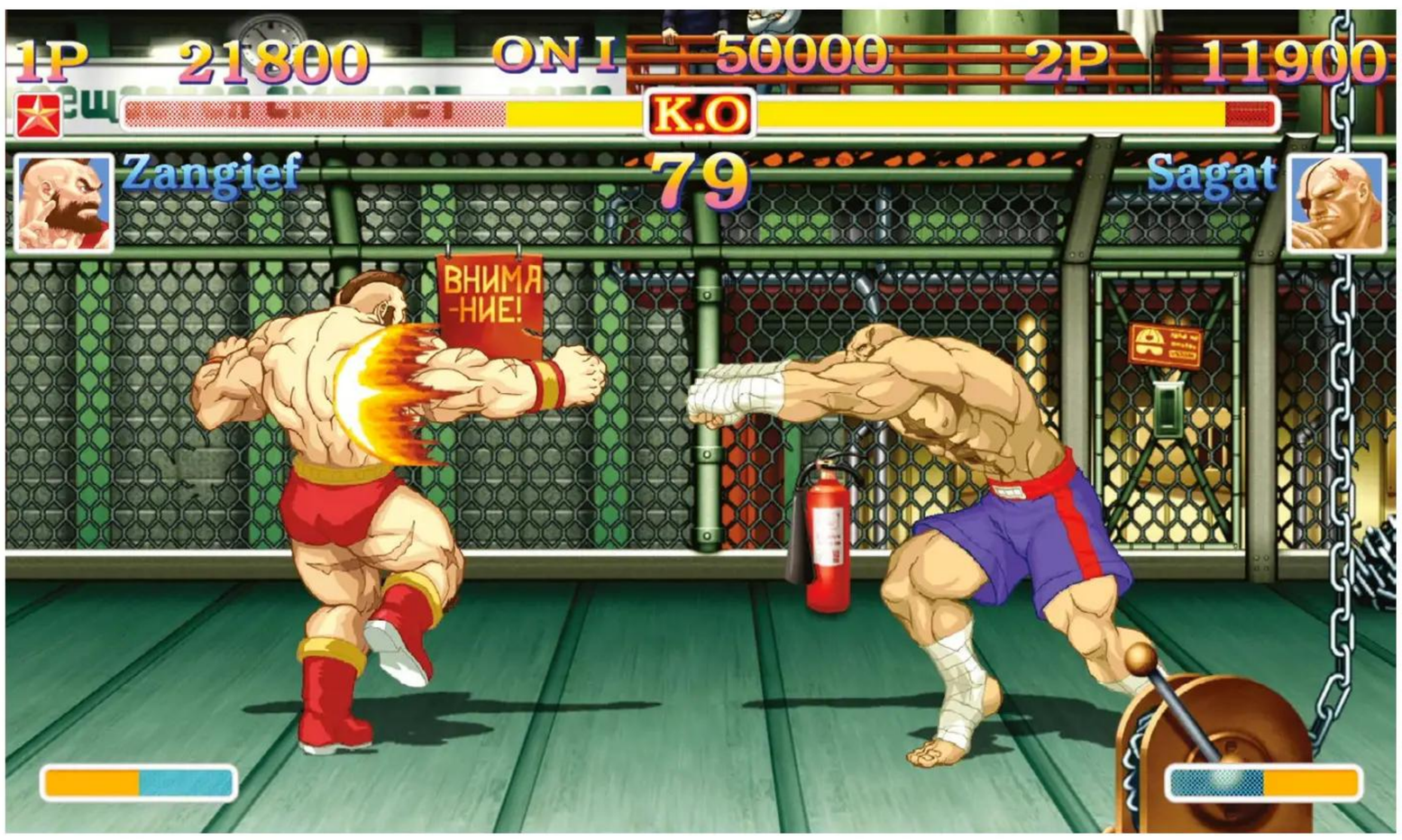
1991-2017

Sometimes, there's a game so big that it's impossible to talk around – you simply have to address it before any other conversation can take place. That's the situation with Capcom's fighting games and *Street Fighter II*. While it wasn't the developer's first foray into the fighting arena, it is far and away the most consequential, the foundation upon which the company's later works and indeed, much of the rest of the fighting game world is built upon. Having a choice of eight selectable characters was revolutionary in 1991, as was the combo system that famously started life as an accidental feature.

Another major feature of *Street Fighter II* was the way that Capcom sought to keep it fresh with regular updates – these made the bosses playable, enabled mirror matches, increased the game speed and eventually added new characters and the concept of the Super Combo. *Super Street Fighter II Turbo* remained a competitive mainstay for many years, but Capcom has revisited the game a few times since then, most recently with *Ultra Street Fighter II: The Final Challengers* some 26 years after the game's arcade debut. Players still love *Street Fighter II*, and so they should – there will never be another quite like it.

» [Arcade] The classic cast of *Street Fighter II* characters are among the most recognisable in gaming history.

» [Arcade] Following player demand, Capcom followed up with updates that kept the game fresh for years.



» [Switch] *Ultra Street Fighter II* accompanied the launch of the Switch in 2017, with classic and updated visual options.

PLAYING FOR GENERATIONS

THE FIGHTERS GENERATION WEBMASTER FRANK JOSEPH ON CAPCOM'S FIGHTING PROWESS

How did you first encounter Capcom's fighting games?
I grew up in Tampa, Florida, and it was a great place to be a gamer, with lots of free-standing arcades. I absolutely played *Street Fighter* at the arcade – I remember a regular joystick and buttons, not the one that you smashed – and then *Street Fighter II* changed everything, just reinvented the entire competitive scene. Every *Street Fighter* game after that, I played religiously.

As Capcom diversified its fighting games beyond *Street Fighter*, were there any others that you particularly enjoyed?
Well, that would definitely be *Marvel Vs Capcom* and the whole *Versus* series. I remember how powerful it was to just see a huge crowd around the machine. *Marvel Vs Capcom 2*, especially in the Tampa area – I mean, we would go to these arcades and there would always be someone there for like decades to play these games. The same guys every weekend, year after year after year, just playing *Marvel Vs Capcom 2*.

Why do you think Capcom has been able to maintain leadership in the fighting genre for so long?
In my mind, just the success of the original games in so many ways was smart console ports, playable console ports – if we actually practised at home, it would pay off at the arcades. [*Tekken* producer] Katsuhiro Harada, a few years back, talked about the feel of a character and how to design a character around that. I think about particular characters like Urien and Akuma in *3rd Strike* that I really like, it's so powerful – you want to actually press Start to play that character, just the way it feels and the mind games and the combos. On that deep level as a player, it always calls me back.

» [SNES] Ryu aims for Rolento, one of the newcomers in *Street Fighter Alpha 2*.

» [SNES] When a ninja and a punk walk into a public loo, fighting is practically inevitable.

» [SNES] The masses of bikes in Chun-Li's stage survive the transition, and still move along.

IMPOSSIBLE PORT AWARD

STREET FIGHTER ALPHA 2

1996

The 16-bit generation was old news by the time the middle child of the *Street Fighter Alpha* series was ready to head to home consoles, and the first versions appeared for the PlayStation and Saturn. It might have been logical to assume that the shiny new Nintendo 64 would be next, but Capcom wanted to target the largest possible audience. As a result, the stunning decision was made to convert the state-of-the-art fighter to the ageing SNES, with the developer delivering the game to Japanese players just seven months after its arcade release. The SNES version of *Street Fighter Alpha 2* is a surprisingly faithful conversion, containing all 18 regular characters and all of their moves, playing just as well as you'd hope. It even includes most of the backgrounds, though it is missing a couple of secret character variants. This is all possible because the cartridge includes the S-DD1 chip for decompression of graphical data, squeezing as much use as possible from the 32Mb ROM. While the game does suffer from occasional pauses for audio loading and it's overshadowed by versions on other platforms, *Street Fighter Alpha 2* on the SNES was remarkably respectable for the players using more modest hardware.

PARTY STARTER AWARD

POWER STONE 2

2000

After years of traditional fighting games, the original *Power Stone* was a welcome change to the formula. It was still one-on-one, but the freedom of movement in 3D arenas and the variety of weapons at your disposal were unlike anything else in the genre. However, when *Power Stone 2* came along and cranked up the craziness to new levels, it clearly marked its place as Capcom's best fighter for party games. The most obvious way it did so was by adding support for four-player battles, instantly making the game feel far more chaotic than its predecessor.

However, that wasn't all – stages now had even more interactivity built in. You might suddenly find yourself falling through the sky and scrambling for an umbrella, or trying to scale a large castle before your rivals, and you could even jump into little tanks or huge gun turrets in an attempt to take out your foes. All the while, the game remains accessible to newcomers as moves don't use directional inputs and are therefore very simple to execute. Popular with both regular fighting game fans and those who normally avoid the genre, this is sure to be a hit at any multiplayer night.

» [Dreamcast] With turrets aplenty and bits falling off, the airship stage is a hazardous place to be.

» [Dreamcast] Quick, climb the castle or get left out in the cold! A little platforming is required here.

RIDICULOUS ROSTER AWARD

MARVEL VS CAPCOM 2: NEW AGE OF HEROES

2000

» [Dreamcast] Here's Ruby Heart, the brand-new pirate character designed just for this game.

A three-on-three tag team fighting game needs a large character roster to avoid getting stale quickly, and Capcom duly delivered with *Marvel Vs Capcom 2*, an overstuffed delight of a game which features 56 characters. While the likes of Spider-Man, Wolverine, Captain America and Hulk were always easy to recognise, time has only enhanced the value of some of the other Marvel members of the cast – the likes of Iron Man, Cable and Thanos have benefitted from movie fame since the game was released. There's also room for some characters that weren't so well known at the time, with Marrow and Shuma-Gorath standing out as examples.

On the Capcom side of things, it's no surprise to see *Street Fighter* mainstays like Ryu, Chun-Li and Akuma, and the *Darkstalkers* contingent including Morrigan, Felicia and Anakaris was equally expected. However, Capcom brought in deep cuts like *Star Gladiator*'s Hayato Kanzaki, and looked beyond its typical fighters – Tron Bonne and Servbot bolster the *Mega Man* representation, *Resident Evil*'s Jill Valentine joins the fray, and SonSon is a throwback to the company's arcade classics. There are even original characters, the pirate Ruby Heart and cactus dude Amingo. Such a massive roster inevitably proved tricky to balance, so some characters are definitely more viable than others, but you certainly won't get bored trying to find your favourites.

HONORARY MEMBER AWARD

SNK VS CAPCOM: THE MATCH OF THE MILLENNIUM

1999

This crossover fighting game is the first to ever pit Capcom's combatants against the warriors of SNK. It has Capcom in the name and it's full of Capcom characters. However, unlike all of the other games in this feature, Capcom neither developed nor published the game. Those duties fell to SNK, which promoted this game as a flagship title for its Neo Geo Pocket Color console.

SNK had pretty much mastered the art of developing fighting games that you could take on the bus, and delivered the most feature-packed handheld fighter ever seen to that point. The game's 26 characters included a mixture of *Street Fighter* and *Darkstalkers* characters for the Capcom side, and they could face off in solo battles, *King Of Fighters*-style three-on-three team battles and highly impressive tag team matches. There are even three styles of Super Meter to choose from, and a selection of minigames for when you tired of fighting – one of which features Arthur from the *Ghosts 'N Goblins* series.

BEYOND ONE-ON-ONE

WE HAVEN'T FORGOTTEN THE SCROLLING BEAT-'EM-UPS

FINAL FIGHT

»1989

Final Fight was the advance in its genre after *Double Dragon*, and clearly inspired the *Streets Of Rage* series. *Final Fight*'s story has now been absorbed into the *Street Fighter* canon, with both the heroes and villains joining the roster starting from *Street Fighter Alpha*.

ALIEN VS PREDATOR

»1994

This licensed arca allows for up to three players to take on the Xenomorph threat, playing as either cyborg soldiers or Predators. It's a great-looking game that offers plenty in the way of carnage, but the Capcom Home Arcade still counts as the game's only official home release, which is rather sad.

DUNGEONS & DRAGONS: SHADOW OVER MYSTARA

»1996

Drawing on staple RPG mechanics such as buying items, changing equipment and casting magic, this beat-'em-up stands out from the usual crowd. The Saturn version is expensive, but the 2013 digital compilation *Dungeons & Dragons: Chronicles Of Mystara* is still available on Xbox and Steam.

VIEWTIFUL JOE

»2003

While it's a bit different from the classic examples of the genre, *Viewtiful Joe* reinvigorated the template with special VFX powers that draw upon the game's movie theme. With lovely cel-shaded graphics and a ton of charm, this is one to consider next time you want to dish out some pain.

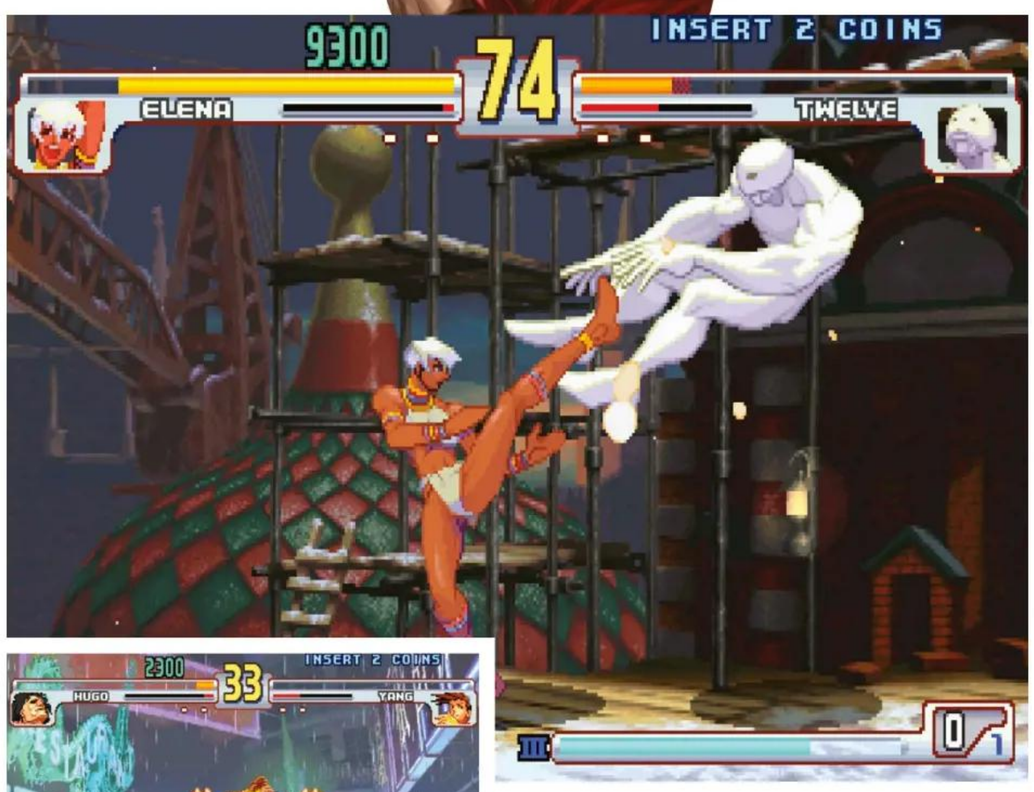
AMAZING ANIMATION AWARD

STREET FIGHTER III: 3RD STRIKE

1999

Of all the games in this feature, *Street Fighter III: 3rd Strike* is perhaps the one that has benefitted the most from retrospective reappraisal. When it arrived in 1999, *Street Fighter* fatigue was a real phenomenon and 2D games were unfashionable. It took some years and *that* Daigo parry to turn opinions around, but these days it's recognised for being a *Street Fighter* game with a distinctive cast and great gameplay, and one with an excellent soundtrack to boot.

However, *Street Fighter III: 3rd Strike* is notable for being one of the most beautiful 2D games ever made. Part of that is down to the detailed backgrounds, but Capcom was particularly proud of the enormous amount of animation frames the CPS-3 arcade board could deliver – so much so that final boss Gill was designed to demonstrate that sprite flipping was unnecessary. The result is that the character animation really steals the show, as every fighter moves with a fluidity that had never been seen in fighting games before – and has rarely been seen since. From Elena's dancing to Twelve's twisting limbs, there are so many beautiful motions in this game that just wouldn't be the same if Capcom hadn't gone wild on the animation.



» [Arcade] Elena lands an elegant high kick on the rather odd creature known as Twelve.

» [Arcade] You can just see the force that Hugo is putting into that torture rack backbreaker.

» [PlayStation] Regardless of the version you buy, *Rival Schools* remains a great fighting game.

» [PlayStation] The simulation mode really isn't going to be of much use to those who can't read Japanese.

» [PlayStation] Ah yes, English penalty taking technique. Best in the world, don't you know.

BETTER IN JAPAN AWARD

RIVAL SCHOOLS: UNITED BY FATE

1997

It was always a memorable day whenever a fight broke out at school. Kids gathered in a circle, chanting, "Fight! Fight! Fight!" as they craned their necks for a view of the awkward lunging punches, before the inevitable intervention of a teacher put an end to the playground pugilism. Capcom's school-themed scrapper is just as memorable, not only for being one of the company's early 3D fighters, but for its tag team action and an aversion to taking itself too seriously. If you're scared of trying new characters, Sakura from the *Street Fighter* series is even present as a cameo.

The Japanese players got an expanded home conversion on the PlayStation that included the Evolution Disc, full of extra modes. Among them were a selection of minigames like penalty kick and home run contests, as well as the School Life mode – a character creation mode that took the form of a dating sim. While the Evolution disc was included in both the North American and PAL versions of *Rival Schools*, the minigame and dating sim modes above were completely cut from the game, leaving Japanese players with the better release. A similar situation happened with its Dreamcast sequel, *Project Justice: Rival Schools 2*.

THE LORE LORD SPEAKS

STREET FIGHTER STORY EXPERT STEVEN MANE DISCUSSES WHAT MAKES CAPCOM'S FIGHTING GAMES SPECIAL

You take a different approach from many fighting game enthusiasts in focussing on lore – how has Capcom done well with this over the years?

Because of system limitations back in the day, we were only allowed a tiny snippet of each character's life to truly explore, but as we've progressed in gaming technology, more detailed stories could be told. In *Street Fighter*, we began to learn about Ryu's fight with himself, Guile's grief over Charlie Nash's death and Cammy's dark past as an agent for Shadaloo. Capcom has managed to handle the complicated lore relatively well by using what they need for their games versus what they can put in supplementals (manga, encyclopaedias, etc) for future story building.

Which games would you highlight as being key advances in the way Capcom presents its fighting game stories?

The *Street Fighter Alpha* series, and in particular *Alpha 3*, was the first chance for Capcom to really branch the story out and truly create a living world. Character-specific introductions, rival battles, and in-match dialogue became staples of the series, and over time influenced other fighting games as well. In the *Street Fighter IV* series, we got everything we could want: character-specific dialogue, rival battles with build-up, cinematic stories and Juri Han. Outside of *Street Fighter*, though, *Marvel Vs Capcom: Clash Of Super Heroes* was able to tie the Marvel characters' stories and the Capcom characters' stories together and allow them to interact with each other in ways that we just haven't seen since.

Why do you think the *Street Fighter* cast meshes so well with other properties for crossover projects?

For a crossover to work, both properties need to have an established fanbase that at least has a passing interest in the other work. Ryu and Chun-Li have just as much name recognition and respect as Spider-Man and Storm because gamers grew up with all of them. More so, just like the superheroes in comics, we see the characters in *Street Fighter* go through the challenges of learning their own powers and special moves while simply trying to live their lives. Quite simply, their character designs make them feel that much more real to us and is a testament to the artists who created them in bringing them to life.

CAPTIVATING COMPILATION AWARD

CAPCOM FIGHTING COLLECTION

2022

There have been some very good Capcom fighting game compilations in the past, so this wasn't an easy award to pick, and it's actually a rather recent one that gets the nod. They say that variety is the spice of life, and that's why we've gone for ***Capcom Fighting Collection*** – a ten-game compilation for Switch, PS4, Xbox One and PC. The bulk of the collection comprises the *Darkstalkers* arcade games – the original, *Night Warriors: Darkstalkers' Revenge*, *Darkstalkers 3* and its two Japan-only updates, *Vampire Hunter 2* and *Vampire Savior 2*. Fans of fights and frights should be rather pleased with that.

The rest of the collection is rather more eclectic. *Pocket Fighter* has miniature characters but packs a mighty punch with its crossover cast, *Hyper Street Fighter II* is there to deliver familiar thrills, and *Cyberbots: Full Metal Madness* is an entertaining robot rumble that lets you customise your machine with different parts. The CPS-3 fighting game *Red Earth* gets its first home port here, and returns to the early days of the genre with a limited selection of player characters and a wider variety of CPU-exclusive fighters. If you get bored of those, batter a friend in the excellent *Super Puzzle Fighter II Turbo* instead.

» [Switch] *Darkstalkers* fans should enjoy this – after all, it's not like they're acknowledged often.

» [Saturn] Guile is exclusive to the home versions of *Street Fighter Alpha 3*.

» [PlayStation] It's Ken on Ken action in the World Tour mode – Barbie is thrilled.

» [Game Boy Advance] This is a game that has no right being as good on Nintendo's handheld as it is.

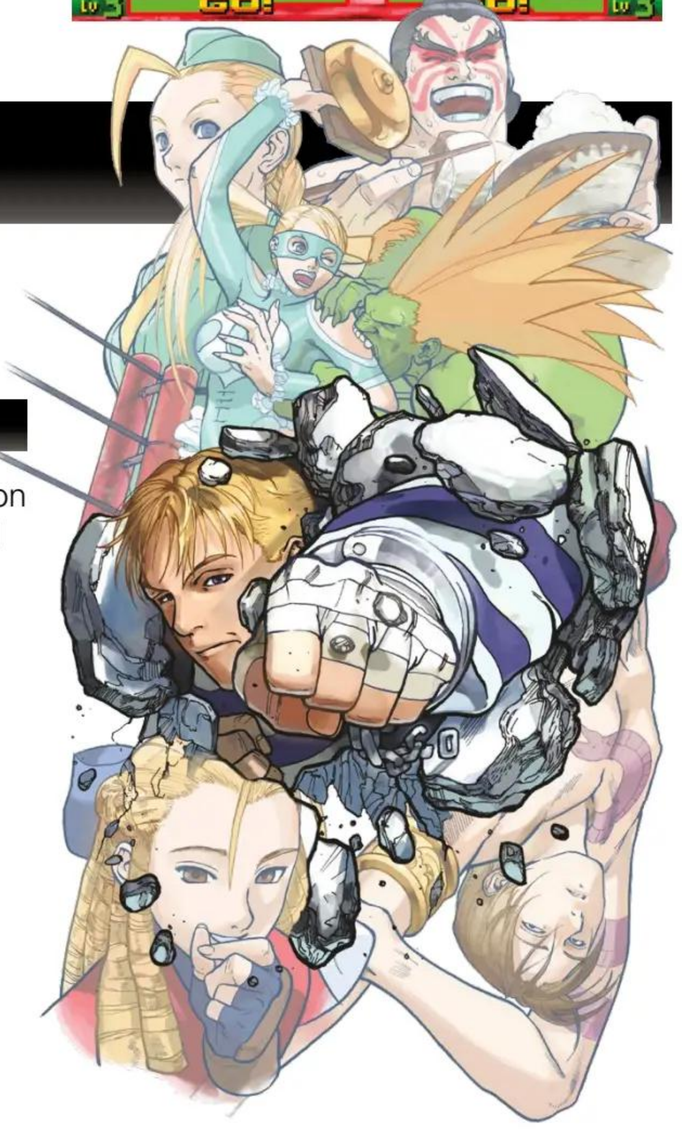
BEST HOME PORTS AWARD

STREET FIGHTER ALPHA 3

1998

The concluding entry in the *Street Fighter Alpha* series was pretty great as an arcade game, but the home versions really pushed the boat out in terms of content, and were designed to make use of each console's specific features. The initial PlayStation version admittedly suffered from animation cuts and long loading times, but it did bring back a bunch of extra characters including Fei Long and Guile. Better yet, the World Tour mode presented the opportunity to customise your fighter to take on a variety of missions, adding plenty of longevity for solo players, and Japanese players even got PocketStation support. The Dreamcast version retained the additional features of the PlayStation version, minus the PocketStation support, and the second Japanese release added online multiplayer. The Saturn version actually released after that as the penultimate new game for the console, and it was a stunning conversion that used the 4MB RAM cartridge to present the most arcade-accurate experience so far, with World Tour and extra characters included.

The Game Boy Advance version by Crawfish was another port that felt like it shouldn't have been possible at all, never mind with extra features, but it added Eagle, Maki and Yun to the roster – all of whom stayed for the PSP version, where they were joined by Ingrid from *Capcom Fighting Jam*.



» [Arcade] Ryu's taken some supplements, so he's not coming to the superhero fight with any Hadoken envy.

» [Arcade] Zangief said he was a "red hot hunk of burning love" but we don't think he quite meant it like this.

OVER-THE-TOP AWARD

X-MEN VS STREET FIGHTER

1996

While the *Street Fighter* roster already possessed superhuman abilities, their standard moves simply weren't going to cut it in a crossover with legitimate superheroes. Capcom's solution was simple – turn everything up to 11. Being able to somersault over another human being was no longer enough, now fighters could leap three times the height of the screen and perform deadly combos in the air. Projectile attacks that had once seemed like adequate super moves were suddenly consigned to the bin, replaced with screen-filling beams.

X-Men Vs Street Fighter was one of the earliest fighting games to employ tag team gameplay, which gave the game a relentless pace as characters switched in and out frequently – and of course, both members of a team could unleash their Super Moves at once. The game even squeezed in some crazy background moments, with players able to be smashed through the floor into the sewers in Manhattan. It was a landmark game that sowed the seeds for the chaos of *Marvel Vs Capcom*.

PERFECT PRESENTATION AWARD

CAPCOM VS SNK: MILLENNIUM FIGHT 2000

2000

» [Dreamcast] Boom – there goes the traffic accident, and now we've got some interesting scenery to fight against.

Would it be fair to say that *Capcom Vs SNK* is one of the most stylish games ever made? We certainly think so. It seemed as though the landmark crossover gave Capcom's developers the desire to rethink the way that its fighting games were presented, and the game really does feel like an event as a result. The way the camera sweeps through 3D corridors as you move between selecting your Groove and the unusual tilted character select screen, the way the character portraits reflect the Groove you chose as you select your team order – it looked cool then, and it looks cool now. The excellent presentational touches extend to the fights, too. While many of the Capcom characters do reuse their sprites, the new sprites for the SNK characters are excellent. Each stage has a little intro, from simple things like panning up from a puddle rippling with raindrops to our favourite – a retro racing game sequence that culminates in a crash, setting the scene for a fight against the backdrop of a raging inferno. The soundtrack fits right in with the overall look of the game too, creating an atmosphere that even its own sequel couldn't match.

UNLIKELIEST CROSSOVER AWARD

TATSUNOKO VS CAPCOM: ULTIMATE ALL-STARS

2008

Being completely honest, we were rather more familiar with one side of this crossover than the other. While the likes of Gatchaman and Yatterman are names that we had heard of, we would be lying if we said that we knew much beyond that when this most unexpected of crossover games was announced. "But **Retro Gamer**," we hear you cry, "Tatsunoko Production is a big deal in Japan, so isn't this award simply a case of cultural bias?" That's a good question, but the answer is no.

Really, you have to look at Capcom's other crossovers to understand why this felt so far out of left-field. It makes perfect sense that Capcom would create a crossover using its own fighting properties, as in *Pocket Fighter* and *Capcom Fighting Jam*. Crossing over with other prominent fighting game series, as in *Capcom Vs SNK* and *Street Fighter X Tekken*, is also not far-fetched. Meanwhile, Capcom had already developed *X-Men: Children Of The Atom* and *Marvel Super Heroes* before introducing its own characters to the mix. Without the prior relationship or natural fit cast, Tatsunoko does stand out as an odd partnership – but thankfully, one that resulted in arguably the Wii's best fighter.

» [Wii] Frank West must be happy to be fighting something other than undead cannibals, we reckon.

THE CAPCOM RAZZIES

HERE ARE THE GAMES THAT JUST WEREN'T GOOD ENOUGH FOR THE REAL AWARDS...

STREET FIGHTER: THE MOVIE

»1995

While it's not the v game out there, *Street Fighter: The Movie* looks woefully dated due to its use of digitised sprites of the film actors. Capcom is at its best when setting fighting game trends, and this was a case where it followed them to its own detriment.

MEGA MAN: THE POWER BATTLE

»1995

Taking *Mega Man* realm wasn't the worst idea, but the execution left a lot to be desired. This simple boss rush recycles enemies from the classic console games, and while it looks nice enough, we'd rather put our coins to use elsewhere and get the full experience at home.

FINAL FIGHT REVENGE

»1999

This would have b acceptable 3D fighter in the mid-Nineties. Unfortunately, it hit arcades the same year as more impressive games like *Tekken Tag Tournament* and *Dead Or Alive 2*. Worse yet, the home version served as a mediocre end to Capcom's stellar support for the Sega Saturn.

CAPCOM FIGHTING JAM

»2004

This attempt to sa cancelled 3D game *Capcom Fighting All-Stars* was a real mess. With a weird character roster full of mismatched sprites, ugly backgrounds and a severe lack of balance, this is the closest thing to an officially sanctioned Mugen game Capcom has ever released.

» [Xbox 360] *Street Fighter IV* brought back lapsed fans by putting heavy focus on the old World Warriors.

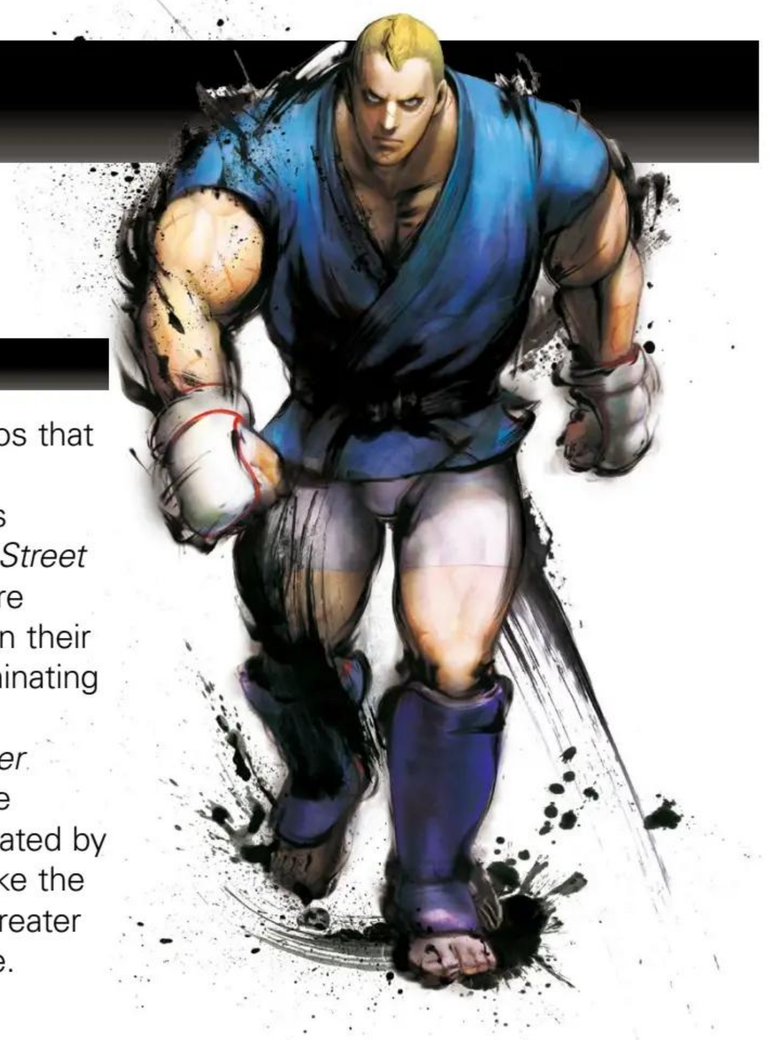
» [Xbox 360] Did Crimson Viper seem more like a *King Of Fighters* design? Maybe, but she was plenty of fun.

» [Xbox 360] Hey, it's a moment of triumph for Dan – everyone's favourite pink-clad martial artist.

BEST COMEBACK AWARD

STREET FIGHTER IV

2008



The earliest years of the new millennium certainly weren't kind to Capcom's premier fighting series. After *Street Fighter EX3* received a middling reception on PS2, *Street Fighter* seemed to transition into a legacy brand – good for nostalgic releases like *Street Fighter Anniversary Collection*, but not much else. Then came *Street Fighter IV*, which Capcom co-developed with the ex-SNK developers at Dimps. This game would bring back the *Street Fighter II* cast and add a handful of newcomers including French grappler Abel and the Mexican luchador El Fuerte, while the 2D gameplay included new mechanics such as the hit-absorbing Focus Attack and Ultra Combos that could facilitate improbable comebacks.

Absence had clearly made players' hearts grow fonder. The original arcade version of *Street Fighter IV* drew huge attention from hardcore fans, and home versions of the game sold in their millions, leading to a series of updates culminating with *Ultra Street Fighter IV* in 2014. But it wasn't just a comeback for the *Street Fighter* series – the fighting game scene as a whole benefitted from the renewed interest generated by Capcom's game, with major tournaments like the Evolution Championship Series seeing far greater attendance in the years following its release.

» [Dreamcast] Despite many years of waiting, we still believe that *Darkstalkers* hasn't yet taken a stake to the heart.

PLEASE REMAKE THIS AWARD

DARKSTALKERS CHRONICLE

2000

If you don't count crossovers – and for the sake of this argument, we don't – *Darkstalkers* is arguably second in Capcom's fighting pecking order behind *Street Fighter*. You just wouldn't know that based on how much attention Capcom pays the series, and the neglect baffles us. Succubus Morrigan Aensland is the face of the series and still appears in a variety of Capcom games, but with the modern popularity of Halloween and all things spooky, it seems criminal that we so rarely see any activity from a series filled with monsters. The *Darkstalkers* games allowed for experimentation that often carried over into the company's other fighting games, such as the introduction of air blocking and powered-up EX moves.

If you want to enjoy the ultimate *Darkstalkers* experience, track down the Japan-only Dreamcast release *Vampire Chronicle: For Matching Service*, or the PSP port that was brought to international audiences as *Darkstalkers Chronicle: The Chaos Tower*. This is a version of *Darkstalkers* 3 that not only lets you pick from every character in the series, as well as a specific game in the series for them to draw moves and properties from – a cool gimmick later employed in *Hyper Street Fighter II*.

MASTERFUL MECHANICS AWARD

CAPCOM VS SNK 2: MARK OF THE MILLENNIUM 2001

2001

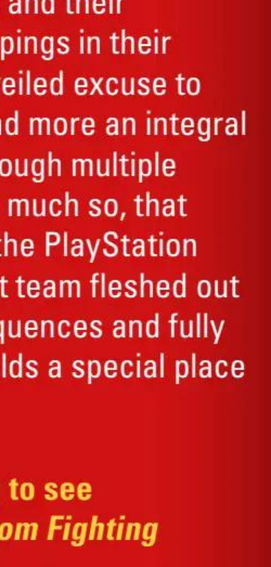
Of all the fighting games that Capcom has produced, we reckon that when it comes to gameplay, the second of its clashes against cross-town rivals SNK is the undisputed champion. At the most basic level, you've got a fighting model refined over years and a massive roster of 48 characters. There's the return to six-button play after the original used just four, and the Ratio system from the first game has been revised – rather than each character having a fixed strength, the game allows you to split four points between up to three team members.

But that's not all – the Groove system has been expanded, with six options that offer mechanical approximations of various games from both companies. Depending on which you choose, you can have dodge rolls or parrying, dashing or running, air blocking or small jumps. You can choose to manually charge your Super Meter, you can choose custom combos, you can have the Rage Gauge from *Samurai Shodown*. It may be daunting for fighting newcomers, but that's not who *Capcom Vs SNK 2* is aimed at. This is a game for the hardcore fan, and it offers so much flexibility that you can come back to it for years. ✱

» [Dreamcast] Seeing as he's using P-Groove, Guile could just parry Iori's projectile here.

THE STREET WRITER

CAPCOM BRAND MANAGER MATT EDWARDS REFLECTS ON SOME PERSONAL FAVOURITE FIGHTERS



Why do you think Capcom was able to offer such a diverse range of fighting games in the Nineties?
Even back in the Nineties, Capcom had multiple development teams working on a wide range of titles. That's as true today as it was back then. But the difference between then and now is how front-and-centre fighting games were. The most bonkers year for me is 1998. *Street Fighter Alpha 3*, *Marvel Vs Capcom: Clash of Super Heroes*, *JoJo's Bizarre Adventure*, *Plasma Sword: Nightmare Of Bilstein* and *Tech Romancer*. How Capcom was able to juggle this many projects simultaneously is a testament to the highly talented development staff they had under their roof during this rapidly evolving era of the gaming industry.

Capcom produced plenty of great one-offs and smaller series back then. What's your favourite among them?
Rival Schools had an interesting plot that centred on students from opposing schools and their investigation of attacks and kidnappings in their shared city. It was less of a thinly veiled excuse to explain why everyone is fighting and more an integral mystery to motivate you to play through multiple times with different characters. So much so, that when *Rival Schools* was ported to the PlayStation the following year, the development team fleshed out the story further with animated sequences and fully voiced cutscenes. *Rival Schools* holds a special place in my heart for this very reason.

Is there a game that you're hoping to see fresh appreciation for when *Capcom Fighting Collection 2* releases?
For me, it's *Capcom Vs SNK 2*. There's a whole generation of fighting game fans that cut their teeth on *Street Fighter IV*, *V* and *6*, but may not be familiar with this beloved crossover. If you don't know about *Samurai Shodown* and *Garou: Mark of the Wolves*, you'll discover that K-Groove mixes the systems of these two games together in an offensively explosive way. If you've never seen Dudley and Billy Kane chilling out as a red bus swings by on the London stage, you'll hear why *This Is True Love Makin'* is an all-time fan favourite theme. And if you're unfamiliar with the term 'SNK boss syndrome', you'll have one hell of a fight on your hands when you eventually face down Ultimate Rugal.

ULTIMATE GUIDE

SUPER MARIO KART

TAKE SOME GO-KARTS AND MODE 7 TRACKS, ADD A HEALTHY HELPING OF COMBAT AND THEN SPRINKLE IN A LITTLE MARIO MAGIC. WHAT DO YOU GET? ONE OF THE FINEST GAMES EVER MADE FOR THE SNES, AND THE FIRST ENTRY IN A LEGENDARY SERIES OF MULTIPLAYER RACING GAMES

WORDS BY NICK THORPE

Any conversation about the best multiplayer games of all time will, at some point, turn to the *Mario Kart* series. Once that happens, the conversation will almost inevitably degenerate into a heated debate over illegal shortcuts and dirty tactics, and soon enough you'll be challenging your conversational partner to a race, which will inevitably cause further arguments that can be heard half-way down the street. That's not an exaggeration either, as our neighbours have pointed out.

Of course, all of that multiplayer joy started on the Mode 7 roads of the SNES. It's really no wonder that *Super Mario Kart* is far more renowned for its multiplayer racing than its solo experience, because the game was a multiplayer game before it was anything else, a fact that's visible in its unusual use of a permanent split-screen display. Nintendo had initially explored making a multiplayer *F-Zero* sequel, only to discover that it wouldn't be possible to replicate the huge courses needed for that kind of speed in a split-screen game. Going back to the drawing board, Nintendo chose to replace the futuristic anti-gravity racers with go-karts, and eventually replaced the generic racer sprite with Mario characters.

The story of the game's development is much more substantial than the story of the game itself. Why is Mario having a friendly race with both his friends and foes? The manual doesn't elaborate, simply introducing Lakitu as the person in charge of the track. The truth is that it doesn't matter too much, as the genius of using the *Mario* world is that it makes the additional aspects of the racing experience far more intuitive, such as the power-ups. You can use shells in an offensive fashion in the platform games, and that's the case here too. The feather enhances your jumping capability in *Super Mario World*, and the same is true in *Super Mario Kart*. You see coins on the track and you know you want to collect them – in this case, because they increase your top speed.

The setting also provides diverse landscapes to race across, from the slippery mud of Choco Island to the stony roads of Bowser's Castle. The texture of the road is brilliantly conveyed ▶

» [SNES] Luigi drifts his way around a Thwomp, but they're harder to dodge on later courses.

» [SNES] The ability to jump was added because the developers felt it was a core *Mario* feature.

PLAYING TIPS

WAYS TO GET AHEAD OF THE PACK, AND KEEP YOURSELF THERE

QUICK START

■ Get an advantage right from the start of the race with a turbo boost, by hitting the accelerator shortly after the first beep of the starting countdown. It's better to be slightly late than slightly early, as going prematurely will stall you.

SNEAKY SHORTCUTS

■ Look out for gaps in the barrier walls that you can power through with a mushroom turbo. If you receive a feather on a particular course, there's a good chance you can use it to cut across a very dangerous gap.

REAR VIEW

■ If the lower display switches to a rear view while you're racing in single-player mode, one of the racers behind you is about to launch their special weapon at you. Keep an eye out for items flying overhead.

RUIN RIVALS

■ Every racer has a designated rival, who will generally lead the pack whenever possible. Gold trophies are easier to get if you identify them and try to sabotage them, preferably on the final lap to cost them points.

» [SNES] Don't worry, Mario, the CPU racers can't steal your item panels here.

» [SNES] Princess Peach takes out Toad with a Red Shell in the brilliant Battle Mode.

» [SNES] If you see a mushroom on the track, avoid it – it's a poisonous one that will shrink you.

» [SNES] Toad has been squashed flat, after being run over in tiny form.

by the way the karts jump and judder as they drive across wood and stone – a great little graphical touch – and it affects the handling of the eight racers, who share four distinct driving styles between them. Mario and Luigi are all-rounders, Yoshi and Peach have great acceleration but struggle with corners, Toad and Koopa also have good acceleration and great handling but a poor top speed, while Bowser and Donkey Kong Jr are slow off the mark but have the best top speed.

Limitations on course sizes had some distinct effects on the way *Mario Kart*'s circuits were designed, with plenty of twists and turns and a relative lack of long straights, and each race takes place over five laps because of the short circuits. If you're playing solo, the goal of the game is to win each of the three main cups, each of which consist of five races. Should you manage this in the 100cc difficulty class, you'll unlock the final Special Cup, a set of five more courses including the fearsome Rainbow Road, a course without roadside barriers in a floating void. Earning gold here will unlock the 150cc class. You can also take on this mode with a friend, or choose to participate in Time Trial races.

One brilliantly considered aspect of the game is the way in which it subtly favours racers who are trailing behind. While coins tend to be plentiful, racers starting at the front of the grid only get two to start with, compared to five for those on the back row. You'll generally only get one opportunity to drive over an item panel per lap – and since they don't reactivate once used, competition for them can get particularly heated in multiplayer races. You'll tend to get

» [SNES] The CPU cheats a bit – Peach has just jumped over that banana in a way you can't.

better power-ups when you're behind in a race too, helping to even the odds. Thankfully, CPU racers can't make use of the item panels, though they do get an unlimited supply of their own character-specific items. Some of them aren't available to the players, such as the Poison Mushrooms that shrink racers who run into them, as well as Bowser's fireballs.

If you do somehow get bored of the racing action, the Battle Mode is there to provide a way for two players to settle their differences. Choosing one of four maze-style maps, you roam around and try to hit your opponent three times to pop their bubbles before they can do the same to you. The choice to place an extra focus on the combat element of the action proved a great decision, and although the mode is relatively limited compared to the Battle Modes of later *Mario Kart* games, it became a beloved aspect of the game that greatly extended its multiplayer lifespan.

Super Mario Kart was released on 27 August 1992 in Japan, and arrived in North America just days later, with Europe getting the game in January 1993. The game was very popular with critics. Writing in *Nintendo Magazine System*, Radion Automatic mentioned that the game "moves at a cracking pace with a smoothness

ROAD TRIP

HERE ARE THE EIGHT ENVIRONMENTS THAT PROVIDE THE SETTING FOR SUPER MARIO KART'S 20 CIRCUITS

MARIO CIRCUIT

■ The four Mario Circuit courses appear in the Mushroom Cup, Flower Cup and Star Cup, and they are pretty standard raceways with paved roads. Watch out though, as there are oil patches and Warp Pipes on the track.

DONUT PLAINS

■ There are three versions of this less grippy dirt track, with occasional bridges over lakes – in the third one, you'll need to hop over a gap. Monty Moles will jump out of holes and ambush you if you're not careful.

GHOST VALLEY

■ The wooden boards on these three tracks aren't particularly well maintained, so you'll need to watch out for holes in the track. Also, colliding with the walls will destroy them, leaving more ways for unwary racers to fall.

BOWSER CASTLE

■ These three circuits are the penultimate challenge in each of the first three cups, and they offer nasty right-angle turns and plenty of hopping over lava. Thwomps can block your progress, but it's worse if they crush you.

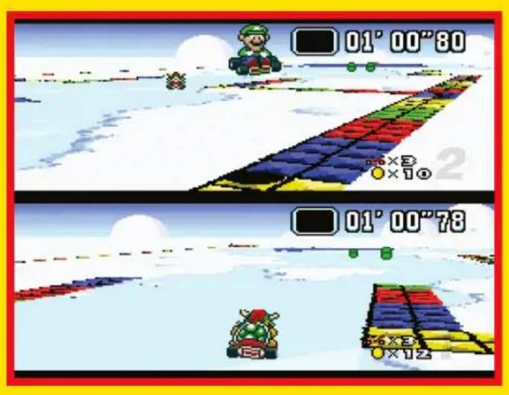
» [SNES] Bowser unleashes the lightning, shrinking and slowing down all of his rivals.

CHOCO ISLAND

■ The first of these two muddy tracks is your first challenge in the Flower Cup. Both of them are really hard to steer on, so you'll want to avoid losing your grip and colliding with the plentiful Piranha Plants.

KOOPA BEACH

■ Your first encounter with Koopa Beach doesn't come until the Star Cup. Avoid the deep water as you hop between sandy islands, and make sure to avoid the Cheep Cheeps that are flopping about the place.



VANILLA LAKE

■ These icy circuits are a nightmare – not only do they offer very little grip, but they are littered with breakable ice blocks. These are placed in the least convenient places, and will seriously halt your momentum if you hit them.

RAINBOW ROAD

■ It's nice and colourful, and the course layout looks forgiving, but if you leave the road you'll fall into the abyss and Lakitu will have to save you. Making things worse are a fork in the road and Super Thwomps.

FIRST LAP ODDITIES

SUPER MARIO KART LAID THE GROUNDWORK FOR A SUCCESSFUL SERIES, BUT WHICH OF ITS FEATURES WERE LEFT BEHIND?

SPLIT-SCREEN

■ Although every home-console *Mario Kart* includes a split-screen multiplayer mode, the SNES game is the only one that enforces a split-screen view at all times. It's an odd look today, and one that will almost certainly never return.

REPEAT COURSES

■ Apart from Rainbow Road, each of *Super Mario Kart*'s course environments are used for two to four distinct tracks. This approach was never used in the series again, though *Mario Kart: Super Circuit* does have four Bowser's Castle circuits.

COINS

■ Four of the first five *Mario Kart* sequels didn't include coins to increase your top speed, with *Mario Kart: Super Circuit* being the exception. *Mario Kart 7* brought the mechanic back in 2011, and it's included in *Mario Kart 8* too.

CHARACTER-SPECIFIC ITEMS

■ *Super Mario Kart* has character-specific items for CPU racers. The only other games in the series to have character-specific items are *Mario Kart: Double Dash!!* and the mobile game *Mario Kart Tour*, both of which let players use the items.

TWO-PLAYER LIMIT

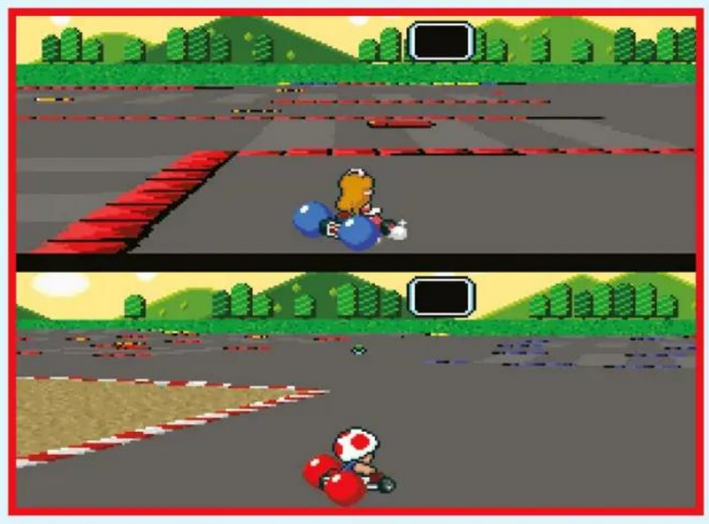
■ Nintendo had a job getting two players racing on the SNES, but later games in the series have allowed for four players by default – even the handheld game *Mario Kart: Super Circuit* and the mixed-reality *Mario Kart Live: Home Circuit*.

FEATHER

■ Eight of the nine power-ups available to players in *Super Mario Kart* have become series staples, but the high-jumping feather was ditched after the first game. It only returned in the Battle Mode of *Mario Kart 8 Deluxe* in 2017.

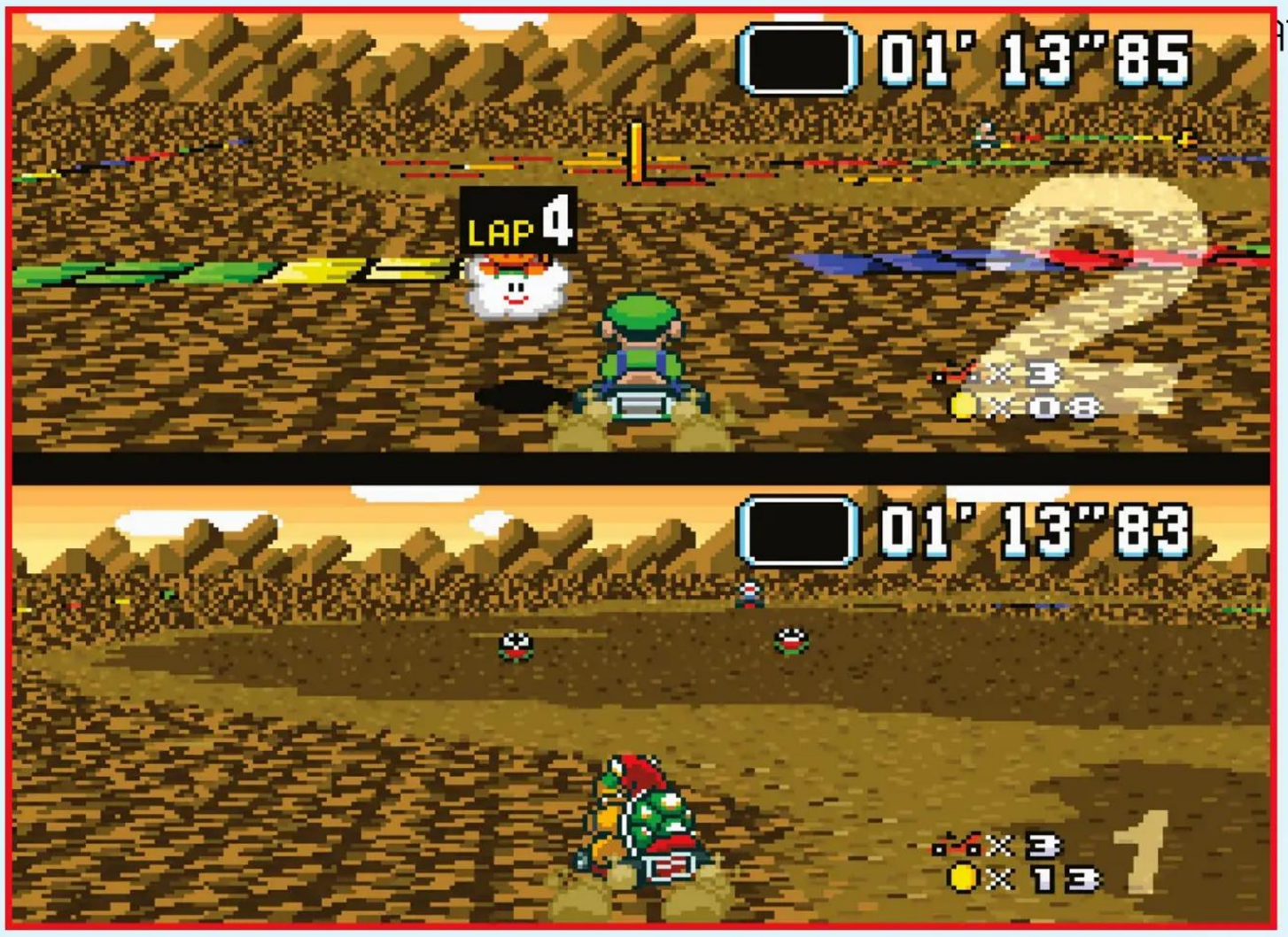
» [SNES] Bowser's about to get a Red Shell up the tailpipe – Peach's revenge for multiple kidnappings.

» [SNES] If Mario had a feather, he could leap that gap and avoid the right-angled turns.



» [SNES] Barriers were added to Battle Mode to prevent players from getting dizzy.

» [SNES] Fun fact: Peach and Bowser actually drink their victory champagne in the Japanese version.



» [SNES] A mushroom helps Luigi speed through this hole in the wall – a nice shortcut.

not seen since the ultra-brill *F1 Exhaust Heat*". In the same review, Jaz Rignall praised the game's "fast, furious and highly addictive racing action" and called it an "utterly essential purchase" for players who could make good use of the multiplayer modes, but felt the solo Grand Prix was "far, far too easy" and noted that the courses are "small and very easily learned". That was still good for a 92% review score.

In *Super Play*'s import review, Jonathan Davies highlighted the "fantastic" graphics and Matt Bielby was impressed by the "bizarre cat-and-mouse alternative" of the Battle Mode, with each giving the game 93%. *Control* gave the game 80% on import, complaining that "you are left gagging for more" because of the low difficulty level, but the UK review a few issues later bumped the score up to 94% and praised the "varied and challenging courses". Frank O'Connor gave it 94% in *Super Action*, declaring it his favourite game ever, and *Computer & Video Games* gave it a whopping 96%, with Paul Rand noting that it "really comes into its own" in multiplayer.

With that combination of recognisable branding and high quality, *Super Mario Kart* was as near to a guaranteed sales smash as you can find, and it became one of the best-selling SNES games ever. As well as being bought by plenty of existing SNES owners, the game was added to console bundles and eventually saw reissues as part of the *Players' Choice* and *Nintendo Classics* budget ranges, selling a grand total of 8.76 million copies. The game later reappeared on the Virtual Console services for the Wii, 3DS and Wii U, and these days is included as part of the range of SNES games available to Nintendo Switch Online subscribers.

Super Mario Kart laid down the blueprint for *Mario* spin-offs in general – games like *Mario Tennis* and *Super Mario Strikers* have adopted similar arcade-style, power-up heavy approaches to their own genres, while including all-star rosters of heroes and villains from the series. However, few have reached the heights of *Mario Kart*, which quickly grew into one of Nintendo's most high-profile series as a procession of sequels built on what was evidently a winning formula. Despite all of those sequels, some players still swear that this first game is the very best of the lot thanks to the purity of its racing, devoid of the Blue Shells, snaking and motorbikes of later entries. Whether or not you agree, there's no question that it's still a fantastic racer. ✱

» [SNES] A seemingly innocuous screen, but one that offers the option to switch items off. The horror!

LEFT IN THE GARAGE

WHICH PARTS OF SUPER MARIO KART NEVER MADE IT TO THE TRACK?

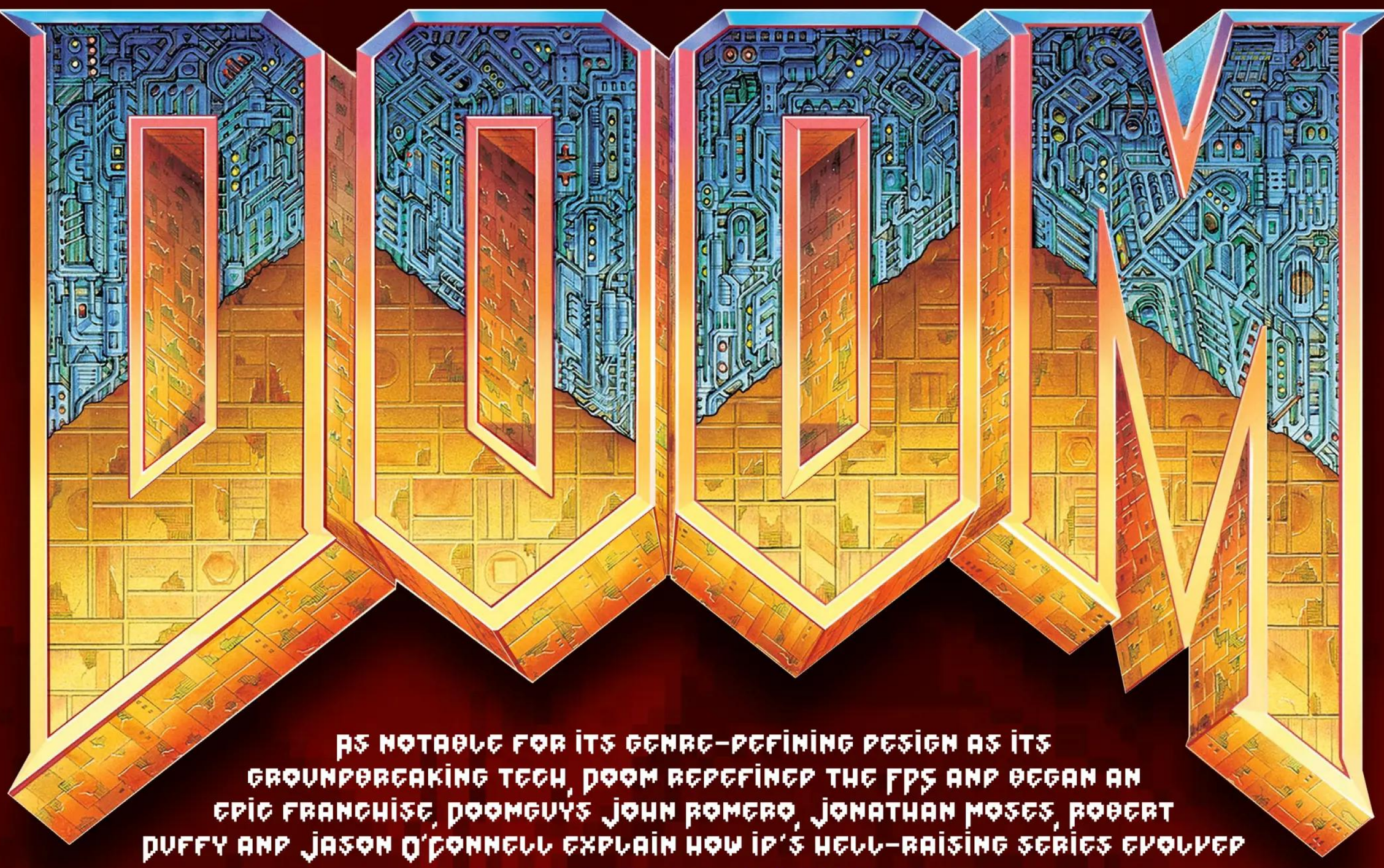
A number of different concepts were tried out on the way to creating the final version of *Super Mario Kart*, and many didn't make it into the final game. In its very earliest stages, over a year before the game was released and before the *Mario* characters had been adopted, the game wasn't just a kart racer – it also included a hovercraft mode, with appropriate sprites and a floaty handling model.

Some months later, with the *Mario* theme firmly established, an alternative form of Battle Mode was tried out in which you drove around a map without obstacles and had access to infinite, rapid-fire projectiles – represented by coins in the prototype. Speaking in the official Japanese strategy guide for *Super Mario Kart* (as translated by Shmuplations), director Hideki Konno noted "spinning around and around in this open field with no obstacles or landmarks, after five minutes you'd get really dizzy".

Later on, months before the final release, there's an option present that might seem like heresy to *Mario Kart* fanatics – a choice to disable items in the Grand Prix mode. Speaking in the Japanese guide book, Konno explained why this was considered. "No doubt, for some people who played *F-Zero* really seriously, the whole idea of 'luck' in a racer would be anathema, so originally we had an option to turn items on/off for the Grand Prix mode. That was our quick fix for that problem," he explained. "But I think that as you play with the items, you come to realise they're implemented in a balanced way: they give some hope when you've fallen behind, and allow for the thrill of an upset victory," he continued.

» [SNES] Here's the generic guy who preceded the *Mario* cast, complete with kart and hovercraft.

THE EVOLUTION OF



AS NOTABLE FOR ITS GENRE-DEFINING DESIGN AS ITS GROUNDBREAKING TECH, DOOM REDEFINED THE FPS AND BEGAN AN EPIC FRANCHISE. DOOMGUYS JOHN ROMERO, JONATHAN MOSES, ROBERT DUFFY AND JASON O'CONNELL EXPLAIN HOW ID'S HELL-RAISING SERIES EVOLVED

WORDS BY RORY MILNE

During his id days John Romero revolutionised the FPS with titles like *Doom* and *Doom II*. He now runs Romero Games.

Jonathan Moses produced *Doom 3* for Activision. He is now director, games partnerships at OneTeam Partners.

There's a certain symmetry to the fact that a game as influential as id Software's first-person shooter *Doom* took influence from a number of sources itself. In terms of tech and gameplay, *Doom* owed much to the long line of FPS titles that id had created previously. This lineage arguably began with the 1991 release of *Hovertank One*, even if its hero drove a tank rather than being on foot. It certainly included id's spell-casting fantasy from the same year *Catacombs 3-D* and the studio's 1992 Nazi-battling shooter *Wolfenstein 3D*.

> "WITH DOOM, WOLFENSTEIN 3D WAS OUR BASELINE, BUT THERE WERE SO MANY MASSIVE LEAPS. NOT LEAST THAT DOOM'S WORLD CHANGED WHAT GAMES LOOKED LIKE FROM THEN ON"
>
> JOHN ROMERO

In terms of *Doom*'s theme, objectives and coolest weapon, id looked to its epic RPG sessions and to the silver screen, as *Doom* designer John Romero explains. "*Catacombs 3-D* was basically the first FPS, then with *Wolfenstein 3D* we added weapons," John remembers. "So with *Doom*, *Wolfenstein 3D* was our baseline, but there were so many massive leaps. Not least that *Doom*'s world changed what games looked like from then on. You went into space and found Hell instead of aliens; the idea of overrunning a space base with demons was from our *D&D* campaign. That hoard of demons coming at you from all over the place was from *Aliens*, and then the shotgun came from *Evil Dead II*."

Far from being *Doom*'s only weapon, its shotgun was just one of many swappable armaments that could be found in the game. These sat on a sliding scale that reflected how much damage they could do, with the most effective option being perhaps the least likely one, as John points out. "The weapon balance was really important; we wanted a design that valued every single weapon," John considers. "We wanted to have visceral kills, we wanted blood and explosions, so we stuck to conventional weapons. You used your fists as a last resort, so then why not power them up with a

Doom 3 lead coder Robert Duffy also worked on many subsequent *Doom* releases. He left the games industry in 2024.

Saber Interactive's Jason O'Connell defined the missions for the 2016 reboot of *Doom* and the levels in *Doom Eternal* while working at id.

» [PC] Despite their thematic and stylistic differences, *Wolfenstein 3D* laid the foundations for *Doom*.

» [PC] There's very little that's more satisfying than taking opponents out in *Doom* with the shotgun.

» [PC] As tough as the typical monsters are in *Doom* they're nothing compared to the bosses you encounter.

Berzerk? It changed the punch from the weakest hit into the hardest hit. The goal was survival, if you wanted to you could 100% the levels, but getting to the exit was more important than killing everything."

This single-player objective was tweaked for another of *Doom's* modes, more specifically its deathmatches, a term coined by John to describe a multiplayer experience where players killed each other's space marines over and over again. But while multiplayer was always intended for *Doom*, it ended up as a last-minute addition. "We knew when we were planning *Doom* that we needed multiplayer in there. Then when it was, the first thing we did was shoot each other, even though it was supposed to be co-op!" John exclaims. "Not once did we think that we needed to make deathmatch-only levels. We didn't have time. We actually forgot about multiplayer until October 1993, and *Doom* was due out that December. The word deathmatch, well I just thought that since it was a match to the death why not call it a deathmatch?"

Adopting the shareware model, *Doom* was released as three episodes in 1993, with the first being free to download and the others being sold via mail order. The massive success of *Doom*'s three episodes guaranteed a sequel, but *Doom II* would be released as a single product at retail. "We weren't trying to market three episodes; we were selling *Doom II*, so there was no reason why we should have that separation," John reasons. "But we put intermissions in because we wanted to give the player a break and a bit of narrative. Those didn't change anything, they just meant that a level ended and then a new one started with the same items. So you got to go longer with the weapons, but the enemies got harder, so you kind of needed to keep your weapons."

STAGES OF EVOLUTION: 1995-2005

MASTER LEVELS FOR DOOM II (1995)

A response to other firms selling CDs of *Doom* content from the internet, *Master Levels* boasts 21 stages designed by authors contracted by id. It also includes *Maximum Doom*, a huge collection of amateur *Doom* files that were available online.

THE ULTIMATE DOOM (1995)

Essentially a retail version of *Doom* that collects the original shareware episode plus the two episodes that were sold via mail order. What sets *Ultimate Doom* apart is that it includes an exclusive fourth episode called Thy Flesh Consumed.

FINAL DOOM (1996)

Intended to be freeware but published by id instead, *Final Doom* incorporates two 32-level episodes: *TNT: Evilution* and *The Plutonia Experiment*. Created by hobbyists TeamTNT, *Final Doom* has the same weapons, items and creatures as *Doom II*.

DOOM 3: RESURRECTION OF EVIL (2005)

Technically a *Doom 3* expansion pack, *Resurrection Of Evil* has so much new content and so many new features that it's pretty much a sequel. It introduces four core monsters and the Artefact, which slows everything down except for the hero.

» [PC] Lock and key puzzles are a big part of *Doom*, and as well as adding challenge, they encourage exploration.

» [PC] There is just as much exploration to do in *Doom II* as the original, with some of the items you need being particularly tough to find.

» [PC] The double-barrelled sawn-off Super Shotgun first appeared in *Doom II* and can inflict serious damage.

STAGES OF EVOLUTION: 2005-2012

DOOM RPG (2005)

The first of two mobile RPGs that were coded by *Doom* legend John Carmack, *Doom RPG* impressively adapts *Doom*'s frantic FPS action into measured turn-based gameplay. Depth is added by interactions with NPCs and accessing computer terminals.

DOOM RESURRECTION (2009)

This stylish rail shooter was designed by John Carmack around the limits of iOS devices available at the time of its development. *Resurrection* uses assets that were created for *Doom 3*, such as characters and art.

DOOM II: NO REST FOR THE LIVING (2010)

An expansion made for the XBLA *Doom II, No Rest For The Living* features hardcore gameplay and a wealth of secrets. There are more foes on-screen at any given time than the PC *Doom II* and ammo is limited, and there's a hidden level to find as well.

DOOM 3: BFG EDITION (2012)

Released years after *Doom 3*, this is an enhanced version of the PC hit with added extras. Besides better visuals, sound and effects, it includes a new episode called The Lost Mission and old favourites like Thy Flesh Consumed.

> "THE OBVIOUS EXTRA WEAPON WAS THE DOUBLE-BARRELLED SHOTGUN. WE THOUGHT WHY NOT HAVE A WEAPON THAT CAUSED REALLY DEVASTATING DAMAGE IF YOU WERE UP-CLOSE?"
>
> **JOHN ROMERO**

Doom II's tough new opponents mirrored the original game's proven combination of cursed soldiers and their demonic masters, with one of those being a less daunting variant of *Doom*'s most challenging boss. *Doom II*'s stages benefitted equally from these new foes and the experience of the sequel's developers. "*Doom* had possessed marines, so why not make another that used the chaingun?" John reflects. "The other new enemies needed to be demons and they needed to be bigger. Like the Arch-vile, and the Revenant with its punch and heat-seeking rockets. We felt a slightly weaker Baron From Hell would be cool, so we changed his colours and made him the Hell Knight. Then those new enemies made the levels really fun. The world also had to look cooler, because after making *Doom* we now knew how to make levels!"

To complement its fun levels, and to balance *Doom II*'s unforgiving foes, the follow-up was given a weapon capable of dealing serious damage at close range to go with the long-range armaments returning from *Doom*. Additional help came in the form of a power-up that boosted players' health and armour. "The obvious extra weapon was the double-barrelled shotgun," John notes. "We thought why not have a weapon that caused really devastating damage if you were up-close? It was so that you could get face-to-face with the enemies, especially the new ones, because they had a lot more health. We created the Megasphere by combining two things from *Doom*. We put the Blue Armour and Soulsphere into one item called the Megasphere. Megaspheres were really

» [PC] Nightmarish horrors such as the skull-headed Revenants were first introduced in *Doom II*.

» [PC] In *Doom II* there are matter transporters that are supernatural in nature rather than technology based.

» [Nintendo 64] As with its predecessors, you get a chainsaw in *Doom 64*, but this one is double-bladed!

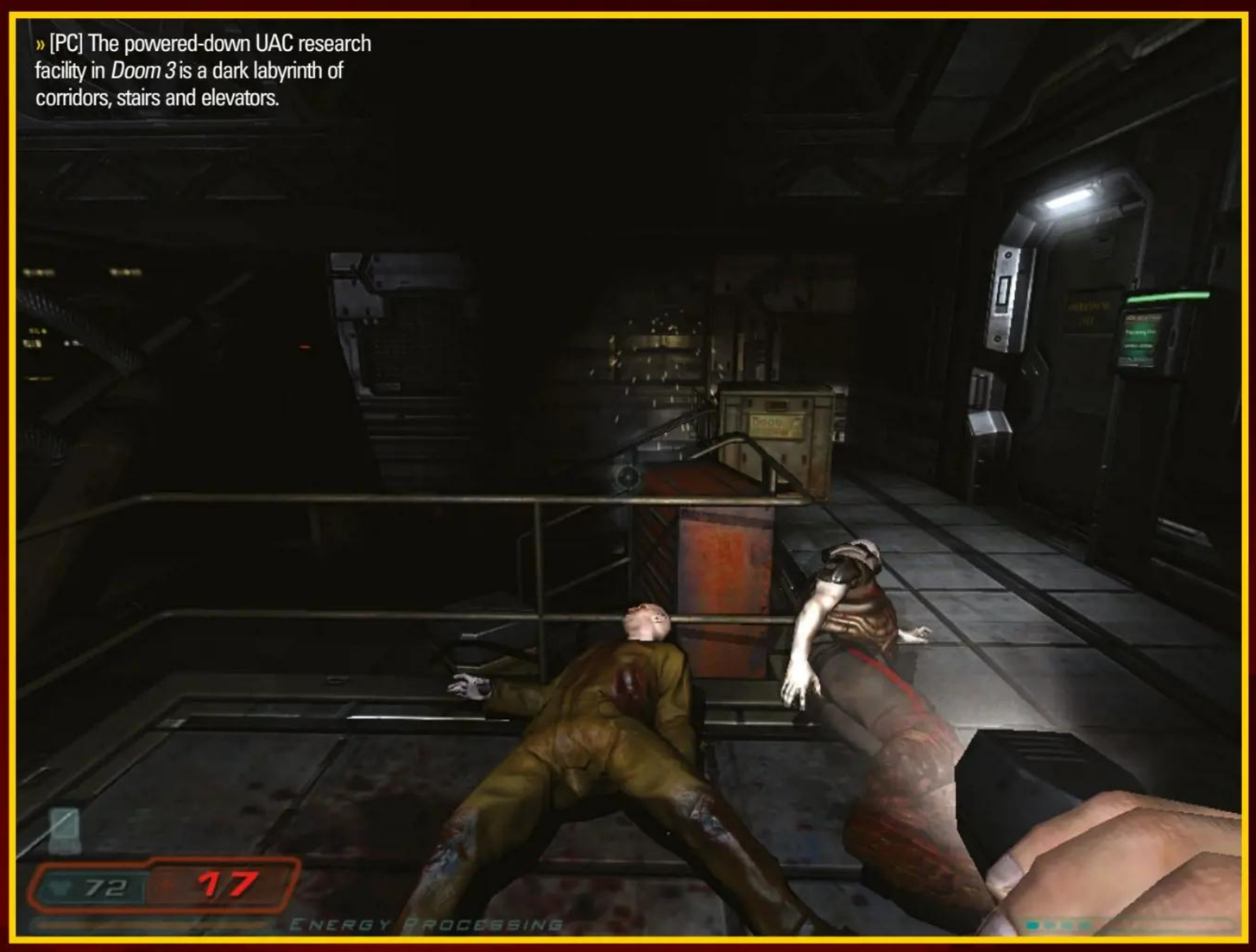
» [N64] The Zombiemen in *Doom 64* are undead space marines who, unfortunately for you, have retained their combat training.

fun for deathmatches particularly, but they were also cool to have in levels."

When *Doom II* hit shop shelves in 1994, the superior sequel easily outsold its mail order predecessor. Various console adaptations of *Doom* followed, but the version that graced the N64 was given an original design and a new weapon thanks to its developer Midway Games and id, which supervised and provided concepts. "The Unmaker in *Doom 64* was from the original design for *Doom* that Tom Hall created before we started working on the game," John recollects. "It was a demonic hand taken from a demon that you would have used as a weapon against other demons. For *Doom 64*, Midway tied the unlocking of its powers to finding artefacts. There was also a captain's hand in the original design that was going to be used as a key to open up a door. That was eventually used in [the reboot of] *Doom*."

Long before *Doom*'s reboot, a decision was made to challenge players to explore *Doom 64*'s gothic environments in near darkness. This was down to Midway rather than id, but Doom's creators fully supported the decision. "Midway had done an outstanding *Doom* for the PlayStation," John recalls, "so when it came to us to ask to make *Doom* for the N64 we told it to do whatever it wanted. *Doom* had very effective dark areas in it, and *Doom 64* was about what it would feel like if the whole game was dark. It was about seeing what that was like. That could have been the influence for *Doom 3*. Maybe its developers thought that felt pretty good, and that *Doom 3* could be even darker."

Discussing the reasons for *Doom 3*'s dimly lit environments, its lead coder Robert Duffy cites id's tech and the survival horror themes that were facilitated by that tech. He credits changing fashions in gaming for *Doom 3*'s focus on narrative-led gameplay and it favouring steady progression. "*Doom 3* was the first game that had real-time lighting and shadows;



» [PC] The powered-down UAC research facility in *Doom 3* is a dark labyrinth of corridors, stairs and elevators.

▶ that was a signature of id Tech 4," Robert observes. "At the time, a lot of gaming was moving away from the high-paced arena-type stuff. We also looked at some of the critical successes like *Half-Life* and other similar games. So I think we wanted a more story-based game, and survival horror fitted nicely into that. This was the first time that we were really able to do these sorts of things to that effect."

The process of basing *Doom* on an unfolding storyline led to id exploring development techniques that were new to the studio. The most minimal of blueprints acted as the foundations for this new approach, which involved storyboards and securing the talents of a noted author. "John Carmack said that he wanted a one-page design doc, so that was what we produced," Robert recollects. "That went into *Doom 3* being the first id game that went extensively into

» [PC] *Doom 3*'s unnerving atmosphere, jump scares and gothic monstrosities give it a survival horror vibe.

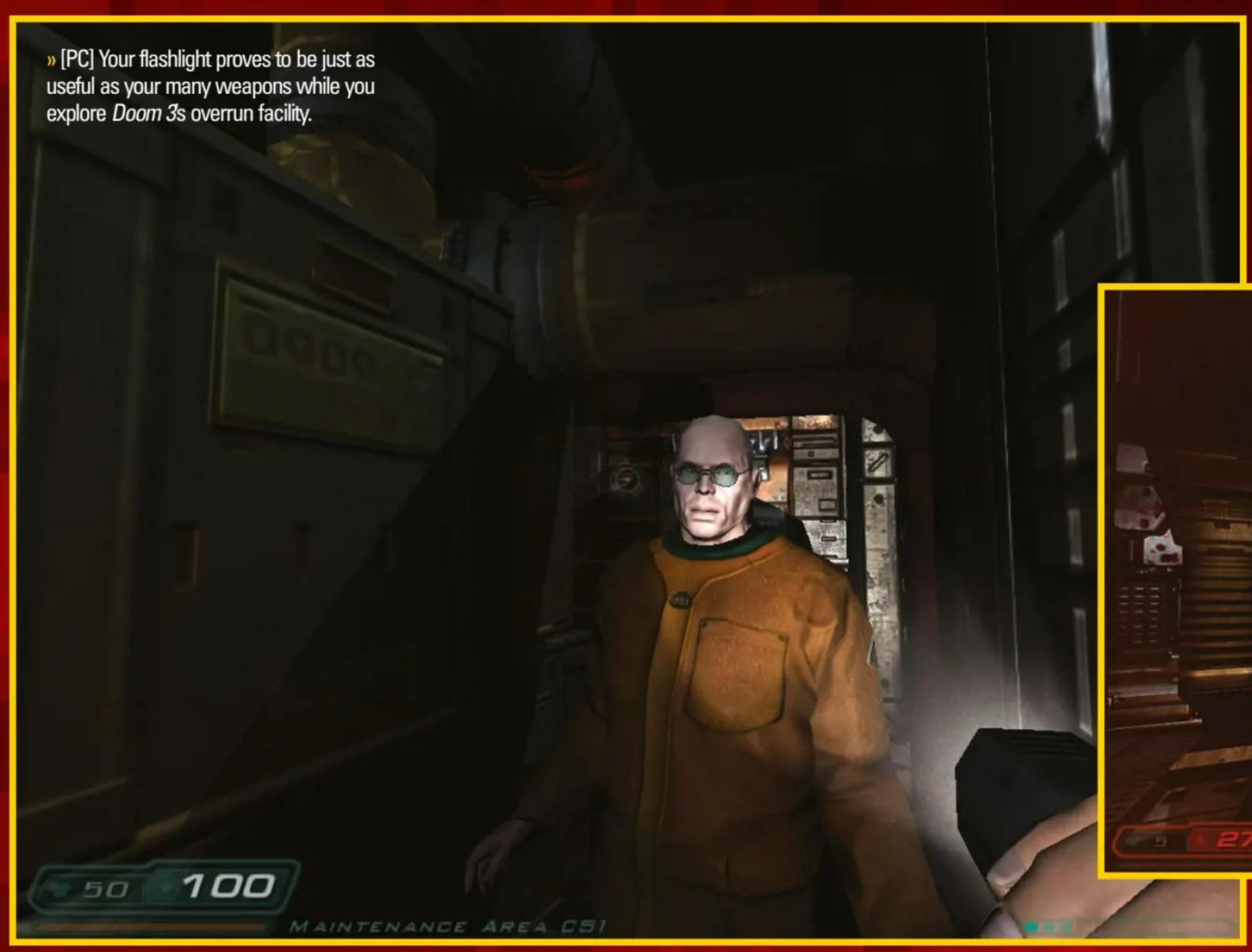
storyboarding, and we really built the game to that. Our lead designer Tim Willits worked up a base narrative, and then we worked with Matt Costello on that. He took the stuff Tim had written and fleshed out the story. *Doom 3* had terminal screens everywhere, and we did a lot of environmental storytelling through those."

As the backstory for *Doom 3* came together, its publisher Activision appointed a producer for the project. Of the many hats Jonathan Moses wore during the project, his roles included hiring and managing voice actors to bring the sequel's dark and haunting cutscenes to life. "By the time *Doom 3* was in production I was the id guy for Activision," Jonathan beams. "I had been working closely with id on *Return To Castle Wolfenstein*, and then by the time *Doom 3* ramped up I just continued those relationships. This was the first game that id had ever done with that kind of voice production. On a bunch of the games I had worked on before I had worked with actors, so I helped id with a lot of that."

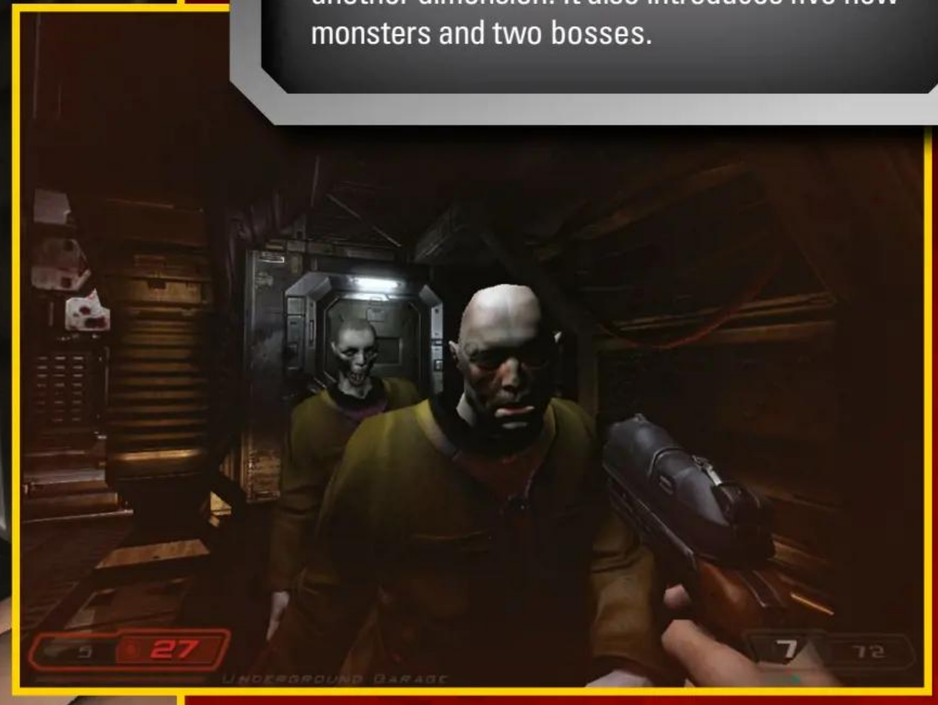
As *Doom 3*'s development began to be measured in years rather than months, one of Jonathan's responsibilities was to manage expectations on the part of its publisher and act as a timekeeper in relation to its developers. He also addressed logistical constraints and pitched in whenever needed. "I understood how to bridge the gap between the suits at Activision that wanted it done today and the guys at id who were saying that it wasn't quite ready yet," Jonathan comments. "It wasn't about rushing id as much as making sure everybody understood what the timelines were. id wanted to keep its team small, so there was a lot of figuring out what it should focus its limited resources on and what could be done by me or other people to help it coordinate the logistics."

> "WITH THE IMPS WE CERTAINLY PLACED THEM WHERE THEY WOULD BE CROUCHED AND IN A DARK SPOT, AND I FEEL LIKE THE CREATURES ACTED LIKE THEY PREFERRED DARKNESS"
>
> ROBERT DUFFY

While Jonathan balanced commercial concerns with artistic aspirations, id artists including Kenneth Scott and Seneca Menard brought Hell to life in the form of demonic creations that hid in *Doom 3*'s shadows. Head programmer Robert Duffy saw gameplay and tech benefits to these monsters lurking in the pitch black. "With the Imps we certainly placed them where they would be crouched and in a dark spot, and I feel like the creatures acted like they preferred darkness," Robert ponders. "I think that came out of the natural way of setting up gameplay to take advantage of the lighting and the shadows. If you heard an Imp ▶



» [PC] Your flashlight proves to be just as useful as your many weapons while you explore *Doom 3*s overrun facility.



» [PC] Many of your foes in *Doom 3* are UAC workers who have been killed and reanimated by demonic forces.

STAGES OF EVOLUTION: 2017-2020

DOOM VFR (2017)

A spin-off from the 2016 reboot of *Doom*, although it's made for VR. Unless your set-up has a joystick you teleport to move forward and to get to higher or lower levels. Then the Glory Kills work by teleporting into staggered foes to make them explode.

SIGIL (2019)

John Romero's unofficial fifth episode of the original *Doom* has nine missions plus a deathmatch version of each. Its single-player offering is arguably more testing than the original episodes. John's sequel *Sigil II* in 2023 got even more plaudits.

DOOM 64: THE LOST LEVELS (2020)

Created for the 2020 *Doom 64* re-release, The Lost Levels is a new episode that was authored by the re-release's developer Nightdive Studios. Its ending connects the narrative of the original games to the reboot, *Eternal* and *The Dark Ages*.

DOOM ETERNAL: THE ANCIENT GODS PART ONE (2020)

The first of two expansions for *Doom Eternal*, it consists of four levels: two set on Earth, another located in Hell and a fourth that takes place in another dimension. It also introduces five new monsters and two bosses.

STAGES OF EVOLUTION:

2021-2024

DOOM ETERNAL: THE ANCIENT GODS PART TWO (2021)

New features in *Part Two* include supreme ruler of Hell, The Dark Lord, and the Sentinel Hammer. This launches the Doom Slayer into the air before bringing him crashing down, which causes a destructive shockwave as it slams into the ground.

MIGHTY DOOM (2023)

The top-down roguelike *Mighty Doom* was a short-lived mobile title set in the *Doom* universe. You got new weapons by filling an ability bar. This was done by killing demons, either with your autofire armaments or up close with a Glory Kill.

DOOM + DOOM II (2024)

Another re-release from Nightdive Studios, this bundle features *The Ultimate Doom*, *Doom II*, *The Master Levels*, *TNT Evilution*, *Plutonia Experiment*, *No Rest For The Living*, *Sigil*, *Sigil II*, and an exclusive new *Doom II* expansion called *Legacy Of Rust*.

DOOM II: LEGACY OF RUST (2024)

Legacy Of Rust has two new episodes: The Vulcan Abyss and Counterfeit Eden. It adds six new enemies, including a demonic version of Doomguy, and two new weapons: the Incinerator and Calamity Blade.

▶ back in a far corner and then you saw the light from a fireball you knew that those were all super important cues, but that also demonstrated the technology."

The critical response and impressive sales of *Doom 3* when it appeared in 2003 more than validated its lengthy gestation period. In analysing this success, its producer for Activision Jonathan Moses credits its immersive narrative and the cutting-edge tech that underpinned its characters, environments and visual effects. "Where id saw its tech going was John Carmack's brilliance in how lighting could work to make what you saw on-screen look photorealistic, while also being aware that games were becoming more story-driven," Jonathan assesses. "So I think the success of *Doom 3* was down to the ultimate hype of id doing something that was revolutionary in terms of tech and was narrative-led. You needed to upgrade your PC to really get the most out of *Doom 3*, so it was just that hype that made it so successful."

Thirteen years after *Doom 3*'s release no further core titles had followed, although expansion packs and spin-offs had filled the void. Then in 2016, *Doom* was unveiled. This reboot, which came from the ashes of *Doom 4* after it was cancelled in 2011, introduced Glory Kills that involved massacring weakened foes before stealing their health, as the reboot's principal mission designer Jason O'Connell details. "Prior to *Doom* there were some clever systems designers prototyping different mechanics, and they stumbled upon this refill mechanic where you killed an enemy and then health or whatever dropped," Jason remarks. "As the game's development moved on we leaned into that, because it was like this butt-clenching feeling when you were close to death but it was in your power to refill. It felt like you were bringing the fight to the demons as constantly as possible, and that doing that was fuelling your success."

Just as the Glory Kills in the *Doom* reboot evolved from the close-quarters kills established by previous *Doom* titles, the game's hero jumping impressive heights and distances could be traced back to clearing gaps in *Doom* by running towards them. The reboot also incorporated double-jumps made possible by high-tech boots. "You jumped way higher in *Doom*; you couldn't jump like that in the original *Doom*," Jason concurs. "That started

> "YOU JUMPED WAY HIGHER IN DOOM; YOU COULDN'T JUMP LIKE THAT IN THE ORIGINAL DOOM. THAT STARTED TO IDENTIFY VERTICALITY A LOT, AND IT OPENED UP EXPLORATION"
>
> JASON O'CONNELL

» [PC] An early objective in the reboot has you destroying a Gore nest, after which all hell breaks loose.

» [PC] The reboot's firefights are more cinematic than the original game's, but they're no less intense.

to identify verticality a lot, and it opened up exploration to a much greater degree. Now you weren't limited to just flat planes or crossing a floor, you could climb up and explore higher. We could make those UAC facilities much grander in scope and make the player feel like they were really exploring those areas. Then it was a logical evolution to go with a double-jump."

Another area of evolution saw the collection of power-ups in the reboot revolve around something other than finding them lying around, as had been prevalent in earlier *Doom* games. Instead, upgrades were secured from drones in the field, although this trend was reversed by 2019's *Doom Eternal*. "I think there was an element of keeping a certain amount of realism; *Doom* [the reboot] was very grounded," Jason contemplates. "It was kind of in this realm where it was still *Doom 3*-ish, where that world could have existed. Trying not to gamify it was the goal initially, because it didn't need to be game-y. So if there was an upgrade then you could get it from some droid. But all of that went away later with *Doom Eternal*; we just made that crazy cool!"

The new weapons in the reboot's follow-up were one of *Doom Eternal*'s main attractions. The opportunities offered by the grappling hook-like Meat Hook, the energy-bolt-firing Ballista, the gauntlet-mounted DoomBlade and their respective upgrades weren't lost on Jason in his role as principal level designer. "Once we

» [PC] id Software first announced *Doom 4* in 2008. After several attempts it was restarted in 2011 and evolved into the reboot *Doom*.

» [PC] *Doom Eternal*s short-range DoomBlade cuts through demon flesh like it was butter.

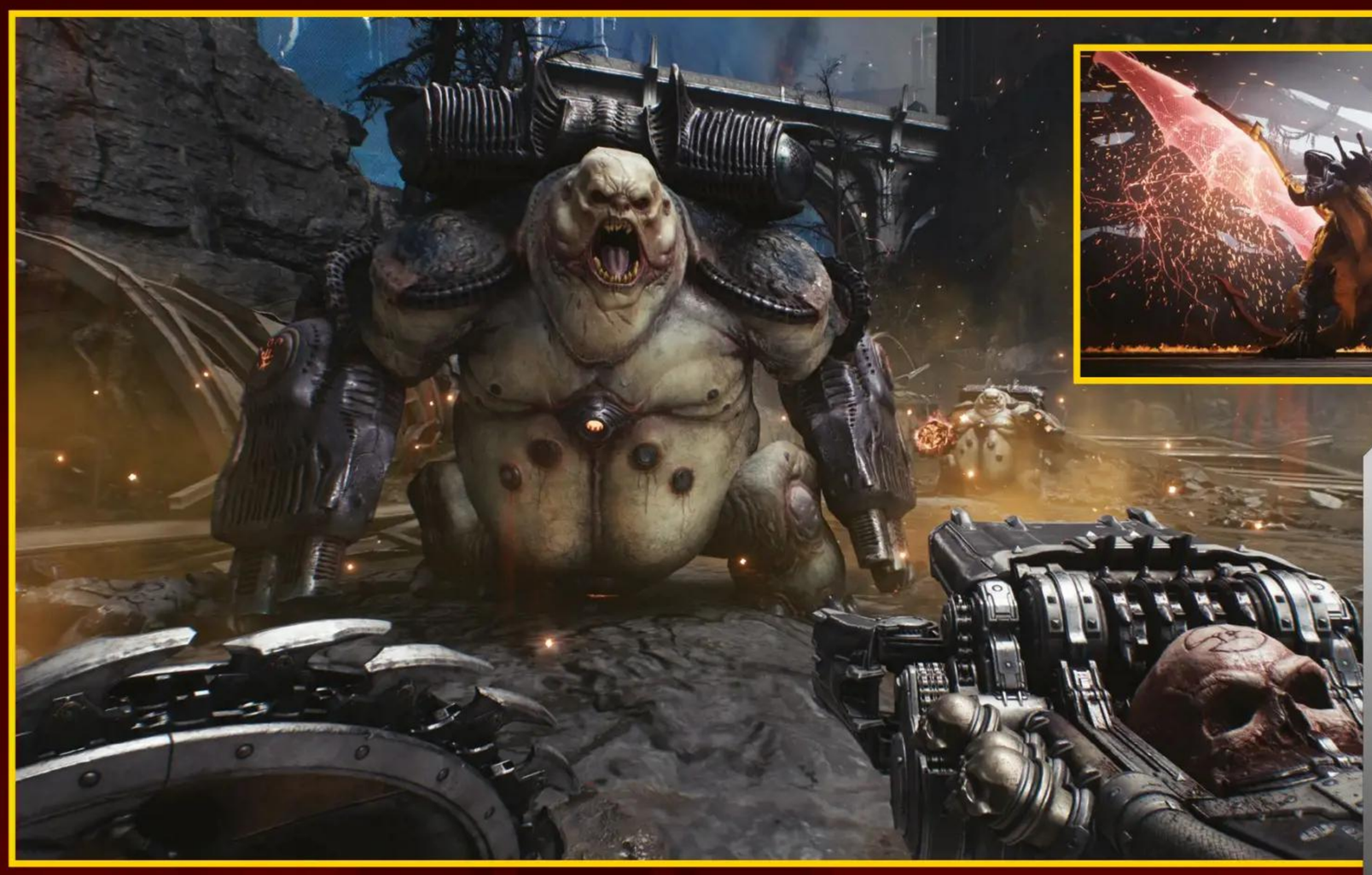
» [PC] In *Doom Eternal* you can climb up or along certain walls in order to gain access to new areas.

» [PC] Although grenades are limited in *Doom Eternal*, they're remarkably effective projectile weapons.

▶ introduced the Meat Hook it was like, 'Shit!' because now you could fling yourself across the arena. So the levels kept growing to support that," Jason explains. "The Ballista was a riff on the Gauss Cannon from *Doom*; it was just the next level up, and the DoomBlade gave some variety to the Glory Kills. Then we expanded all of those weapons with upgrades that changed their behaviour, and a lot of that goes to how much shit you could kill with one blast!"

Adding to the sense of power that the weapons in *Doom Eternal* gave the player was its hero's over-the-top abilities. Thanks to his high-tech armour, he could climb sheer walls and swing across horizontal bars with ease. Jason credits these platforming challenges with providing variety. "I think they were considered pace breakers, because everything was combat heavy," Jason reviews. "I would say Doom Slayer's persona is this godlike man, so of course he could climb up a wall. He could do crazy things when it was all leaning towards him wanting to kill everything he saw. So we experimented with a lot of movement mechanics, like swinging on monkey bars. We also introduced the shoulder cannon, which was like a Predator-type thing, because of course he would need additional firepower at his shoulder!"

To take advantage of this aptitude for carnage, *Doom Eternal* introduced the



» [PC] *Doom: The Dark Ages*' macabre Skull Crusher gun creates shards of demon skulls and uses them as ammo.

concept of 'destructible demons.' This ramped up the game's gore levels, as it allowed players to strip demons down to the bone using firepower, but it also let them blast grafted equipment off their hides. "Demons would have weapons or armour you could shoot off," Jason specifies. "Take the Revenants and their shoulder-mounted rockets. There was an element of skill hitting a jump pad, flying into the air, zooming past real fast and picking those things off their shoulders. Verticality was a focus from very early on. You were still being driven forward, but you were moving through the air a lot of the time. On the ground you were still fast as hell, but in the air you could take advantage of things more."

> "ONCE WE INTRODUCED THE MEAT HOOK IT WAS LIKE, 'SHIT!' – BECAUSE NOW YOU COULD FLING YOURSELF ACROSS THE ARENA. SO THE LEVELS JUST KEPT GROWING TO SUPPORT THAT"
>
> JASON O'CONNELL

In contrast to *Doom Eternal*, its 2025 medieaval follow-up is literally more grounded, in that *Doom: The Dark Ages* depicts its hero as a bulked-up ironclad tank of a man with the skills of a gladiator rather than those of a combat trained acrobat. Of course, being set in the *Doom* universe, *The Dark Ages* depicts its own distinct medieaval era. One where its hero wields a shield fitted with a circular chainsaw that both provides a means of defence and acts as a long-range throwing weapon.

One of *The Dark Ages*' purely offensive but equally medieaval options is a gun that crushes demon skulls and blasts the resulting bone shards at opponents. Then every fantasy medieaval world needs a dragon, so *The Dark Ages* lets you ride a cybernetic one into battle.

When comparing *The Dark Ages* to the original game, *Doom* designer John Romero highlights an increasing focus on close-quarters combat and the prequel's medieaval setting. He concludes with his thoughts on the ongoing success of the *Doom* series. "In *Doom* you were going up against Hell, and just *destroying* it with all these weapons," John enthuses. "Now in *The Dark Ages* you're doing that up close and personal far more, and with *The Dark Ages* id has gone back into the past to tell the origin story of the Doom Slayer. *Doom* being such a successful series is definitely down to its settings, so the storyline being about humanity against Hell. Also the fact that *Doom*guy, who has turned into Doom Slayer, is basically the most powerful killing machine in the universe." ✱

» [PC] The lineage of *Doom: The Dark Ages*' monsters is unmistakable, but their challenge is far greater.

MODDING DOOM

Q&A WITH NOTED DOOM MODDER DANIEL GIMMER

WHEN AND WHY DID YOU START *DOOM* MODDING?

It was around 1993 when I first got an editor. There was no internet in Germany at the time that I could access, so the only way I could get one was by buying a CD-ROM. What attracted me to modding was a demo CD-ROM with a lot of PWADS. I thought that was interesting. I had a few friends that were interested as well, and that gave me motivation.

WHY DID *DOOM* MODDING BECOME SO POPULAR, AND HOW DID YOUR SITE REALM667 EVOLVE?

I think the simplicity of the *Doom* engine was the reason for the modding community's success. It was very easy to create maps with it. The community was very helpful, and you could talk to people who explained how to do things. I first used a Geocities page builder to build realm667 in 1998, and then around 2010 I started to post news articles about the community. I also added categories and filters to allow modders to gather resources.

WHAT'S THE FUTURE OF *DOOM* MODDING?

The community will continue as long as people continue working on it, particularly with people developing source ports that add new features. The *ZDoom* developers, for example, are making things possible now that were pure imagination ten years ago. What's interesting is that there are new modders aged 15 to 20, who weren't even around when *Doom* was released. So *Doom* modding could continue for another 30 years.

TEKKEN

THE UNDISPUTED KING

THREE DECADES AFTER ARCADE GAMERS FIRST GOT TO GRIPS WITH KAZUYA AND COMPANY, TEKKEN IS THE UNDISPUTED CHAMPION OF THE 3D FIGHTING GENRE. WE SPEAK TO KATSUHIRO HARADA AND MICHAEL MURRAY TO FIND OUT WHY THIS FIERCE FIGHTING SERIES HAS ENDURANCE LIKE NO OTHER

WORDS BY NICK THORPE

In the mid-Nineties, the arcade industry was in the middle of two gold-rush moments. The first had started with the introduction of *Street Fighter II* in 1991, sparking a boom in competitive fighting games that showed no signs of subsiding. The second was a hardware arms race between Sega and Namco, as the old rivals sought to outdo one another in the emerging market for polygonal 3D games. Sega was the first to combine the two trends in 1993 with *Virtua Fighter* – a smash hit with players in Japanese arcades, and a game that sold Saturn hardware when it came home.

Namco returned fire the next year with *Tekken*, one of very few games that had both the looks and the gameplay to challenge the pioneer. In fact, *Tekken* did more than simply challenge Sega's game – thanks to its broader international appeal and its home ports to the popular PlayStation hardware, it soon eclipsed not only the *Virtua Fighter* series, but every other 3D fighting game available. The likes of *Dead Or Alive*, *Fighting Vipers*, *Bloody Roar*, even Namco's own *Soul Edge* came along, but none of them were able to dethrone *Tekken*.

And then, one by one, the challengers stopped coming. It's been over five years since the last *Dead Or Alive* game, and even longer since *Soulcalibur VI* released. *Virtua Fighter 5: Ultimate Showdown* is a great game, but it's hardly new. *Street Fighter*, *Mortal Kombat* and *The King Of Fighters* are still around, but while all of them flirted with the third dimension in the past, they have long since retreated to the comfort zone from which they came – that of 2D game design. If you want a 3D fighting game these days, it's *Tekken* or bust.

It's not a situation that Katsuhiro Harada, chief producer of the *Tekken* series, takes any delight in. "It's quite unfortunate, actually, that *Tekken* is one of the only 3D fighting games that is still being played actively by the fans," he tells us. But it is true, and there has to be a reason for *Tekken*'s success. "Harada himself, he's been on the franchise for 30 years, and myself for 20-some as well," says Michael Murray, a producer on the *Tekken* series. "You know, most of the people have been there for just as long, so it's quite unique compared to other companies, we think," he offers.

That creative continuity certainly explains why *Tekken* has enjoyed so few notable missteps over the years – sure, there are consensus high points such as *Tekken 3*, *5* and *8*, but the remarkable level of consistency means that even less-celebrated entries like *Tekken 4* are never less than good, and are arguably more interesting for their differences. So join us for a look at the fundamental factors that have kept *Tekken* fighting fit for a remarkable three decades, and seem set to maintain the series' popularity for many years to come.

KATSUHIRO HARADA
■ *Tekken* series chief producer, Bandai Namco.

MICHAEL MURRAY
■ *Tekken* series producer, Bandai Namco.

» [PlayStation 5] *Tekken 8* boasts an extraordinary level of graphical detail, while maintaining smooth performance.

POWERFUL PRESENTATION

SPECTACLE AND SONIC DELIGHTS HAVE ALWAYS BEEN TEKKEN'S STOCK IN TRADE

It's fair to say that, no matter whether the context is mid-Nineties arcades or the latest consoles, *Tekken* is and always has been at the forefront of presentation in 3D fighting games, not least graphically. "I believe it really set *Tekken* apart. Back in the day when you bought some kind of new platform, fighting games were a benchmark of what was possible on that console," says Harada. "Especially when looking at fighting games, where you have one-on-one matches, you're able to focus really on the portrayal of those humanoid models and how they act, and the level of detail."

What's fascinating is that the original *Tekken* was originally intended to run on Namco's cutting-edge System 22 arcade hardware to compete directly with Sega's *Virtua Fighter 2*, but instead became the first game to utilise the less expensive System 11 board, which was based on the PlayStation hardware. In 1995, Namco's Shigeichi Nakamura told *Edge*, "We've left the big arcade stores to Sega and *Virtua Fighter 2* and *Tekken* has been sold to smaller arcade centres." *Tekken* couldn't match its rival's 3D backgrounds, settling for scaling 2D planes instead, nor could it equal the polygon count of its fighters. What Namco did achieve was the creation of combatants that were equally captivating in their movements and distinctive in their design, and a game that ran at an impressive 60fps.

The choice to use PlayStation-based hardware in the arcade meant that the console version looked equally good – "like no other game on a home system" in *Edge*'s view. The additional space afforded by the CD-ROM allowed for a new introduction video and ending FMV sequences. "We really had some amazing artists at the time, and they were participating in worldwide competitions like SIGGRAPH," says Harada, remembering those pre-rendered scenes. The CD-ROM also allowed for new arrangements of Yoshie Takayanagi and Yoshie Arakawa's original arcade soundtrack, marking the first involvement of prolific series composers Nobuyoshi Sano and Shinji Hosoe.

Tekken 2 pushed things further by adding a lighting system, which really added atmosphere to Lei's rooftop stage and King's church. *Tekken 3* saw the series move to the System 12 arcade hardware, an enhanced board that allowed the series to display full 3D backgrounds for the first time – a feat that the humble PlayStation couldn't replicate. However, an improvement that did make it to the home was the new approach to character models – whereas the first two games had assembled characters from distinctly

» [PlayStation 2] *Tekken Tag Tournament* was an early indication of what Sony's new hardware could offer the series.

» [PlayStation 2] Paul slams Asuka into the concrete floor, causing bits of rubble to go flying on impact.

» [PlayStation] We don't skip the FMV intro to *Tekken 2* – it's too cool for us to want to.

» [Arcade] Neat little presentational touches like special camera angles for throws set *Tekken* apart from the crowd.

modelled parts such as limbs, torsos and heads, *Tekken 3*'s characters had their arms and legs attached. Namco's confidence in animating tricky fighting styles was also growing, as Hajime Nakatani told *CVG* in 1998, "The motion capture of capoeira, the Brazilian martial art, that idea was also considered for *Tekken 2*, but wasn't realised. So we wanted to put this into *Tekken 3*."

In the arcades, *Tekken Tag Tournament* also used System 12 and looked similar to *Tekken 3*, but Namco saw the home conversion as an ideal project for getting to grips with the PlayStation 2. The result was a huge jump in graphical quality, and Namco's PS2-based System 246 arcade board hosted the next two arcade *Tekken* games, bringing parity between console and arcade once more. The ability to render more realistic environments not only informed the gameplay direction of *Tekken 4*, but led to new special effects like water, lens flares and floors cracking upon impact. PlayStation 3-based boards were used for *Tekken 6* and *Tekken Tag Tournament 2*, too, so *Tekken 7* was an oddity in its use of a custom PC-based arcade board.

Tekken 8 has continued to push graphical boundaries, with development solely focussed on the latest console and PC hardware – and for Harada, there are clear benefits to that. "With the bump in resolution, it's much easier for people to see not only fine detailed hit effects, but how much like depth it has in the foreground, etc," he says. "In addition to that, there's even the animation like which way the character is when they're blocking a certain attack, and how that affects the feedback that the players get on what state they're in in the game," he adds, bringing it all back to the service of the fighting.

POCKET POWER

TEKKEN CAN IMPRESS EVEN WITHOUT THE MOST POWERFUL HARDWARE

» [Game Boy Advance] Getting two background layers and a scaling, rotating layer required expert programming.

Although *Tekken* is a series that has always pushed home-console hardware pretty hard, the series has served surprisingly well as a showcase for portable platforms when given the opportunity. This was first demonstrated with the first *Tekken* to come to a Nintendo console, *Tekken Advance* on the humble Game Boy Advance. While its pre-rendered sprites went a long way towards helping, it was some Mode 7-style trickery that allowed the system to get surprisingly close to the look of the original PlayStation *Tekken*.

As good as *Tekken Advance* looked, *Tekken: Dark Resurrection* on the PSP was a whole world apart, managing an excellent approximation of the PS2-powered arcade game. The models and stages were highly detailed, the framerate was rock solid and you'd have had to be pretty curmudgeonly to complain about it. Even more remarkable was the conversion of *Tekken 6* – a greater stretch admittedly, since the original game was designed for PS3 hardware, but a creditable effort all the same.

Tekken 6 was again adapted for handheld as *Tekken 3D: Prime Edition* in 2012, for the Nintendo 3DS. While critics complained of a lack of single-player longevity and rough performance in online play, the game's technical performance was a real treat – not only did it look great, but it held its 60fps performance even with the system's stereoscopic 3D turned on.

» [PSP] *Tekken: Dark Resurrection* felt like it shouldn't have been possible on a handheld console in 2006.

TELLING TALES

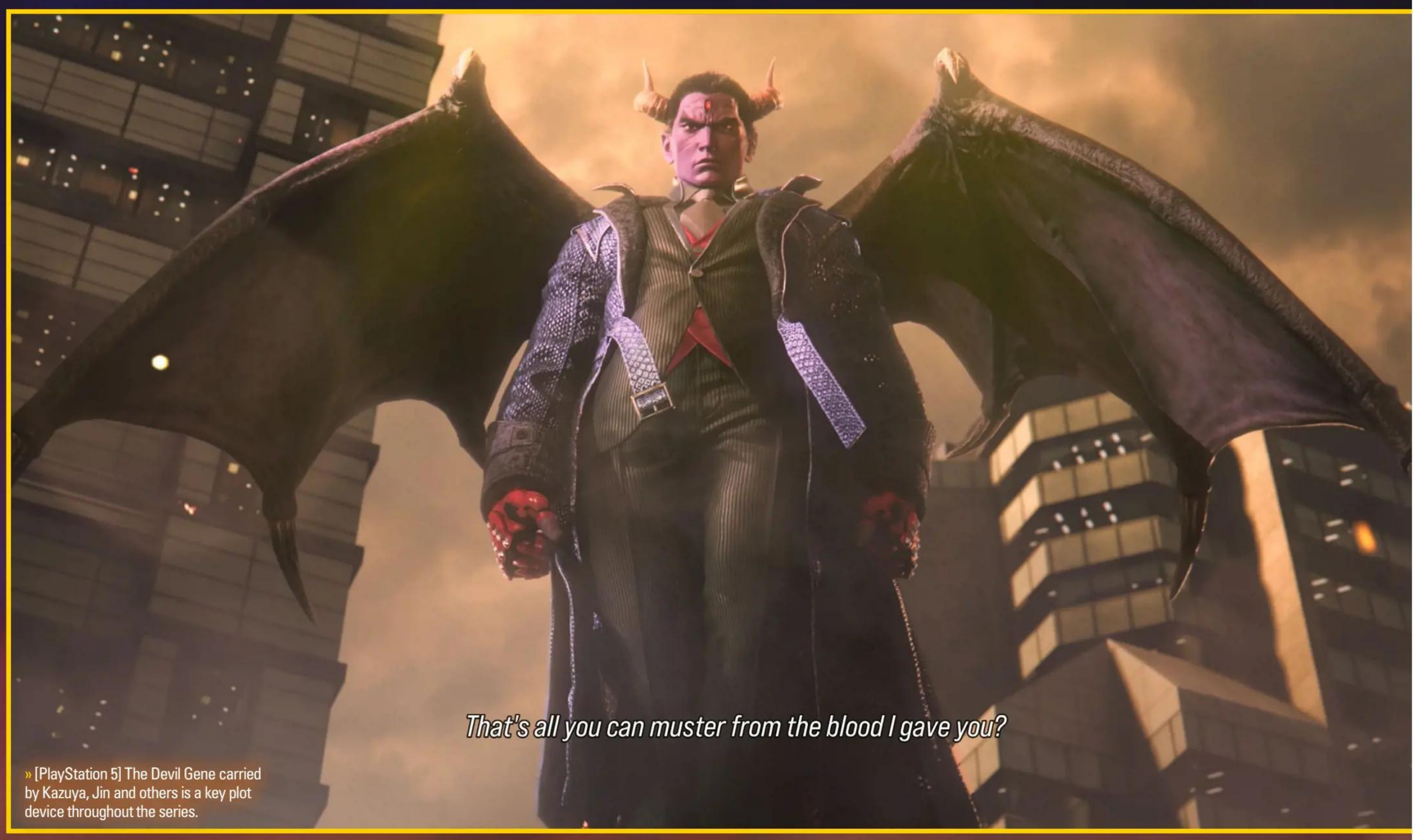
FROM THE VERY BEGINNING, TEKKEN'S STORY HAS SET IT APART FROM THE FIGHTING FIELD

It's a tale involving an extensive family in a constant state of feud, with plenty of fighting and occasional miraculous returns from seemingly fatal incidents – and while we could easily be talking about the Mitchell clan in *EastEnders*, it's *Tekken*'s Mishima bloodline that we're actually referring to. Honestly, the series is such a soap opera that it's a wonder we haven't seen the Queen Vic as a special arena. Then again, maybe giving Phil Mitchell the Devil Gene would spice up Walford a bit.

Although the *Tekken* series has a cast of dozens, the central plot has always revolved around the squabbles of the Mishima family. Heihachi Mishima is a ruthless, cunning businessman who controls the Mishima Zaibatsu, an incredibly powerful corporation with its own private army. When his son Kazuya was just five years old, he threw him off a cliff to see if he was strong enough to get back up, setting up a father-son power struggle for the ages. Jin Kazama, introduced in *Tekken 3* as the son of Kazuya and Jun Kazama, has inherited his father's Devil Gene and seeks to destroy the Mishima family to end the chaos it has caused – chaos that goes well beyond dirty business and into the realm of global warfare.

While competitive play drove *Tekken*'s popularity in the arcade, it's this ongoing story that has been the key to the single-player longevity of the series at home. The PlayStation port of the first game gave each main fighter their own FMV ending scene, not only giving *Tekken* a distinguishing feature over the likes of *Virtua Fighter* and *Battle Arena Toshinden*, but encouraging players to beat the game with multiple characters to see how things turned out for them. The second game added endings for unlockable characters too, and started to show the endless escalation of the Mishima family's attempts to kill one another – as Kazuya's ending in *Tekken* had shown him gaining revenge by dropping Heihachi off a cliff, so Heihachi's ending in *Tekken 2* shows him dropping his son into an active volcano. By *Tekken 3*, inter-character relationships were sufficiently convoluted to require a relationship chart in the Japanese packaging.

The plot began to take an increased prominence from *Tekken 4*, with a prologue shown for each character's story, and *Tekken 5* added pre-fight and post-fight cutscenes for fights against specific rival characters. However, *Tekken 6* radically changed the way the story was told – instead of picking a character and following their path through one-on-one fights, Scenario Campaign had players follow a single main plot starring newcomer Lars, through a Tekken Force-style beat-'em-up. *Tekken 7*'s The Mishima Saga story switched things to mainly one-on-one fights, with occasional deviations, and your playable character would be chosen according to the story requirements. *Tekken 8*'s main story The



» [PlayStation 5] The Devil Gene carried by Kazuya, Jin and others is a key plot device throughout the series.

» [PlayStation] Some characters don't have super-serious stories, as Xiaoyu's *Tekken 3* ending shows.

Dark Awakens and its DLC story Unforgotten Echoes both adopt the same structure, though without the framing device of a journalist's investigation this time around.

With the increasing prominence of the storyline aspect of *Tekken*, we had to know if characters are now included or omitted based on their importance to a game's plot. "The base has always been how the characters play and the concept of the characters themselves," Harada replies. "So that's always come first, [thinking] about what makes this character unique, what people like about their appearance, what is the unique hook in the gameplay that they fulfil when compared to other characters. And then after that, we think about the story and what kind of role that character should play in the background of the story, but it's always the play style first."

This works partially because the cast of supporting characters is so large that plenty are typically deployed in comic-relief roles. However, it's also true that unlike many fighting games where the heroes are always heroic, *Tekken*'s characters don't have a fixed moral alignment. Heihachi, Kazuya and Jin have all served as both protagonists and antagonists over the years, and that flexibility extends to their allies and enemies – power corrupts, and it's hard to stay righteous when you're in a contest to determine the most powerful. That factor allows for *Tekken* to maintain a sense of intrigue that can be hard to find in series with more rigidly defined characters.

» [PlayStation] *Tekken*'s resident Robin Hood, Yoshimitsu, scatters his winnings in a poor district.

FIGHTING ON FILM

TEKKEN FOR THOSE WHO WANT TO KEEP THEIR OWN FISTS CLEAN

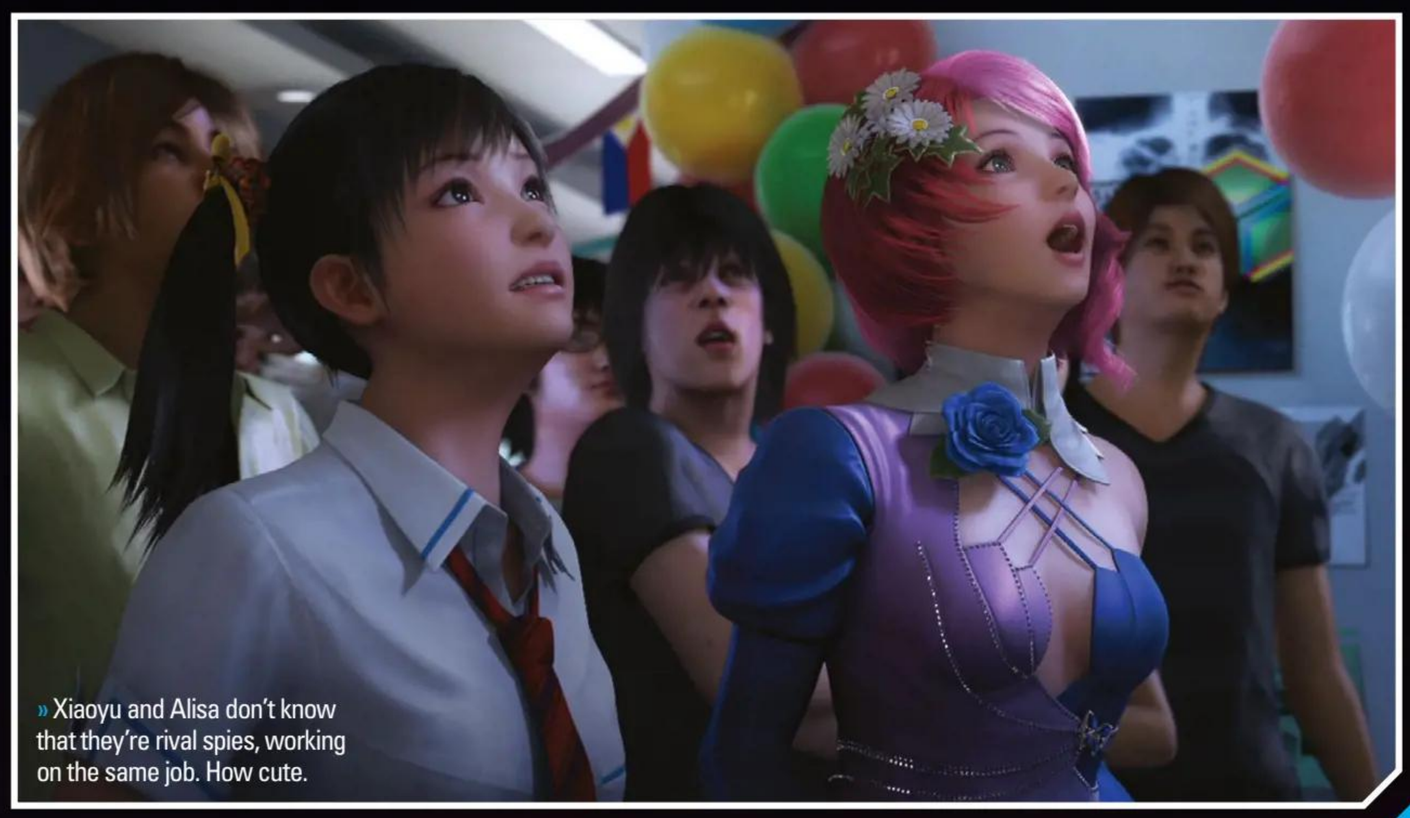
It's no surprise that a series that has cultivated a cast and story like *Tekken*'s would end up as a prime target for film and TV adaptations, and indeed *Tekken* has been taken beyond the videogame realm a number of times. The first such adaptation was *Tekken: The Motion Picture*, a two-part anime that went straight to video in Japan in 1998, before being edited into a single film for international release. It takes the plot of the first game and incorporates a variety of additional characters from the second and third games.

The next adaptation was a live-action effort simply titled *Tekken*, in which Jin (Jon Foo) seeks to confront Kazuya (Ian Anthony Dale) and Heihachi (Cary-Hiroyuki Tagawa) over his mother's death, with Christie (Kelly Overton) and Steve (Luke Goss) as allies. The film was poorly received in its Japanese theatrical release and went straight to DVD elsewhere, and Harada has disavowed it as "terrible". *Tekken 2: Kazuya's Revenge* also went straight to DVD in 2014, with Tagawa reprising his role as Heihachi and Kane Kosugi now playing Kazuya. In this bizarre prequel, Kazuya spends much of the movie battling with amnesia – a condition doubtless envied by anyone who chose to watch it.

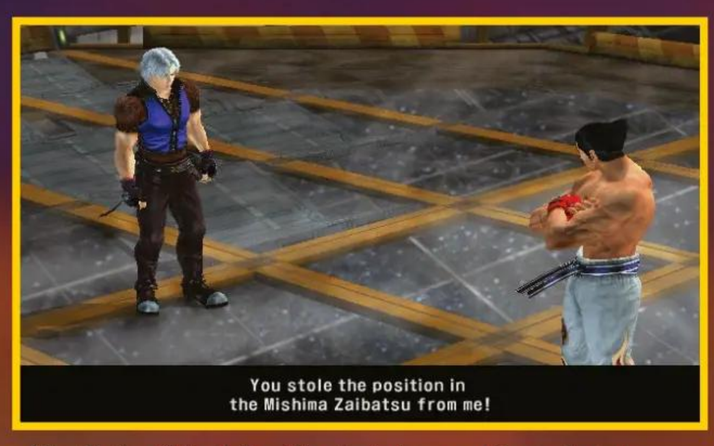
» Hwoarang tries to kick Jin's head off in *Tekken: Bloodline*. Do you think he succeeds?

The more recent animated adaptations of *Tekken* have been closer to the games. *Tekken: Blood Vengeance* is a CG animated movie released in 2011, in which G Corporation and the Mishima Zaibatsu send Ling Xiaoyu and Alisa Bosconovitch respectively into a school as spies, to gather intelligence on student Shin Kamiya. Although the plot was uneven, the faithful depictions of the characters and strong fight scenes made this one of the better adaptations.

A six-part anime series called *Tekken: Bloodline* arrived on Netflix in 2022, and adapted the story of *Tekken 3*, placing more emphasis on Jin's coming of age story. The story was praised for being accurate to the games, but the show was criticised for lacking focus on popular fighters and in particular for being too serious in tone.



» Xiaoyu and Alisa don't know that they're rival spies, working on the same job. How cute.



» [PlayStation 2] As Heihachi's adopted son and Kazuya's rival, Lee Chaolan is another key player in the Mishima family drama.

» [Xbox 360] Lars Alexandersson is the main protagonist of *Tekken 6* and one of Heihachi's many illegitimate children.

» [Arcade] A good character design is recognisable in silhouette form, and Heihachi's twin hair spikes fit the bill.

COLOURFUL COMBATANTS

FINELY TUNED FIGHTERS ARE ONE OF THE FOUNDATIONS OF TEKKEN'S ONGOING SUCCESS

It can be hard to create a distinctive fighting game cast – just ask Data East, which drew the legal ire of Capcom when *Fighters History*'s character designs were deemed too close to those of *Street Fighter II*. However, Namco created a memorable bunch for *Tekken*, and has been reaping the rewards ever since – most notably Heihachi Mishima and his various angular-haired progeny, but also characters like Yoshimitsu, the armour-clad ninja who takes on increasingly bizarre appearances as the series progresses.

That's not to say that *Tekken* is above a bit of homage, mind. Marshall Law and Lei Wulong are quite obviously inspired by Bruce Lee and Jackie Chan respectively, and if King and his leopard mask weren't designed with the Tiger Mask wrestling gimmick in mind, we'll happily take a backbreaker. It also wasn't above a little padding in the early days, with sub-bosses like Kunimitsu and Armor King whose moves were clearly patterned after their immediately playable counterparts. They were unlocked on a timer system in the arcades and served as rewards for beating the game at home, but Namco decided against pursuing that route any further after *Tekken 2*.

Speaking to *CVG* in 1998, *Tekken 3* producer Hajime Nakatani said, "In *Tekken 2* [arcade version] you can see how many times players choose characters, and we found that the sub-bosses were not really much used by players, which means they're not really so popular and not appealing to the user," by way of explanation. "So we decided to increase the number of moves which each character can perform. Therefore we decided to reduce the characters which were not used by the players."

That's not to say that the characters were all killed off of course, it just meant that the likes of Anna Williams had to play differently to her sister Nina to justify her inclusion. It didn't always work out that way – capoeira fighter Eddy Gordo ended up as an alternate skin for Christie Monteiro after she replaced him in *Tekken 4* – but for the most part, distinct characters tended to represent distinct martial arts, of which *Tekken* now features a wide variety from the likes of karate and taekwondo to boxing and sambo.

One thing that *Tekken* was quick to do, which has served it well in the long run, is to embrace funny and quirky characters as a core part of the series. The animal characters started the trend, like Heihachi's bear Kuma and the surprisingly powerful pairing of Roger and Alex, a kangaroo and lizard duo that share moves. Then you've got the likes of Eddy's alter-ego Tiger, Alisa Bosconovitch with her chainsaw arms and detachable head, and the pop idol Lucky Chloe with her cat ears and paws. Even Paul Phoenix and Marshall Law have become a reliable comedy double act over the years.

These days, the massive cast is something that the *Tekken* team is conscious of managing. "For *Tekken 8* we started off with quite a few characters compared to other competitors in the same genre. But also, each of these characters have a bunch of new moves, and have overall a whole lot more techniques than other fighting games.

» [Arcade] Eddy Gordo probably increased worldwide awareness of capoeira, but at what cost?

» [Arcade] Roger might be a novelty character, but don't be fooled – he packs a mean punch.

So from a sheer volume perspective, *Tekken* really stands out," says Harada. "Even if somehow we were able to make even more characters for launch, it wouldn't make sense either, because then it's just too much. It's a lot of choices for you to pick, but it's also a lot of choices for your opponent to pick, so it means that you have to really study even more to be able to effectively beat a variety of different characters," he adds.

To Harada, one of the benefits of the modern shift to downloadable content as a way of updating fighting games is the ability to avoid overwhelming players. "Gradually adding through DLC helps ease people into that, but at the same time, it lets us keep our team of core developers on the game post launch, so that not only can we add these characters, but we can also make additions to the game for features or change certain things, depending on what the community is asking for," he explains. "So it's more of a business model that allows us to do these things, rather than intentionally holding someone back so that we can put them on at a certain time."

» [Arcade] Squabbling sisters Nina and Anna have steadily grown less similar as time has passed.

» [Arcade] We weren't joking about Alisa's head coming off, by the way. It's fine though, she's a robot.

THE GUEST LIST

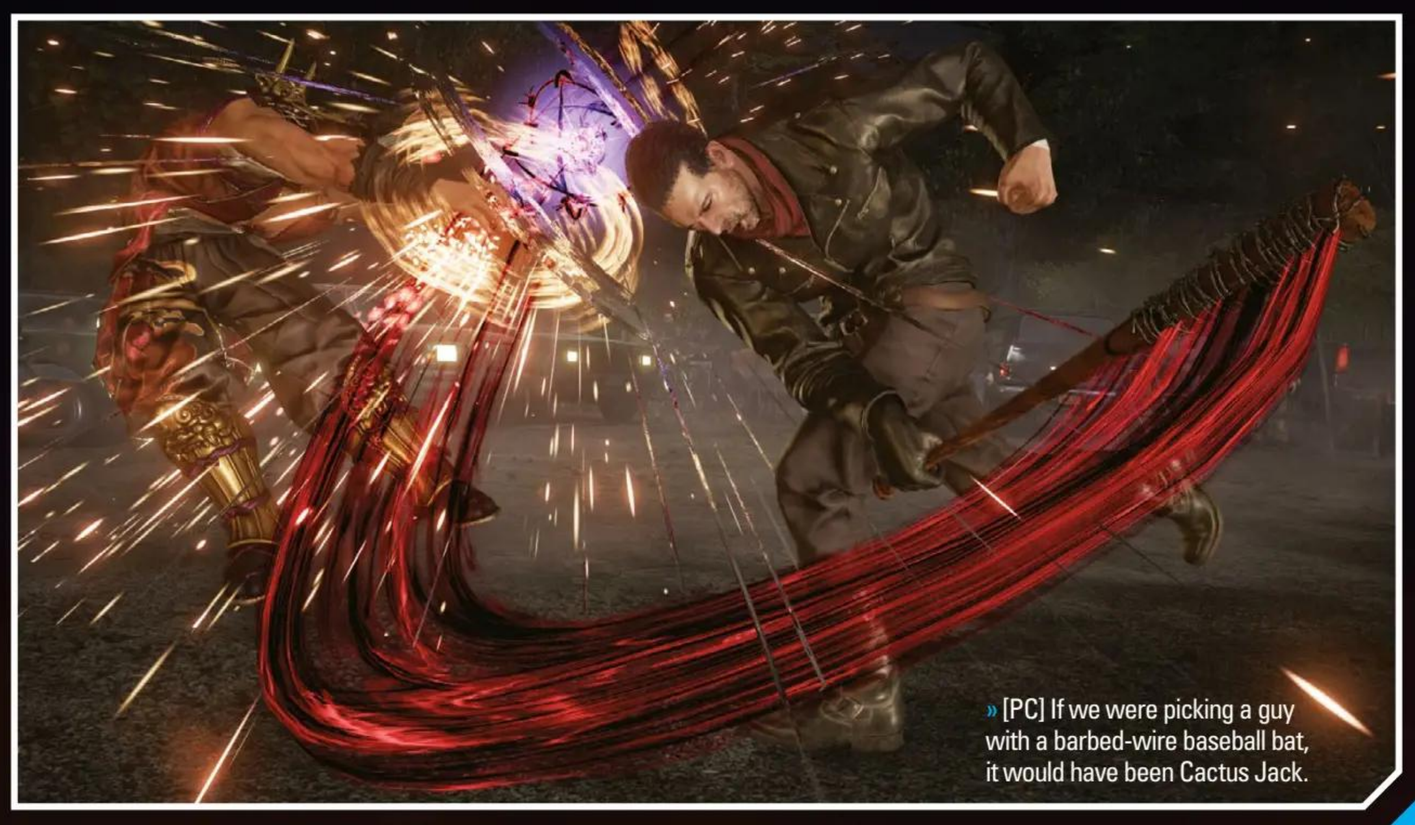
HOW DO YOU GET A COVETED INVITE TO THE KING OF IRON FIST TOURNAMENT?

Tekken characters have been known to show up all over the place, from cameos in games like *Xevious 3D/G* and the *Soulcalibur* series to participation in full-blown crossover efforts like *Project X Zone* and *Street Fighter X Tekken*. However, historically it wasn't exactly a two-way street – after the little dinosaur Gon leapt from the pages of his manga to the PlayStation version of *Tekken 3*, the bouncers got strict and *Tekken* was closed to guests.

However, *Tekken 7* really opened the floodgates. Akuma made the jump from the *Street Fighter* series, carrying across signature mechanics from that series as he did, and Geese Howard came across from SNK's *Fatal Fury* series. As additions from other fighting game series, these were welcome additions, but not nearly as surprising as *Final Fantasy XV*'s protagonist Noctis Lucis Caelum dropping in for a scrap – nor Negan Smith from *The Walking Dead*, the only character not to originate from a videogame.

No guest characters have yet been revealed for *Tekken 8*, though fans have shouted particularly loudly for *Yakuza*'s Kazuma Kiryu and Tifa Lockhart from *Final Fantasy VII*. What Harada did tell us was the kind of guest characters the team prefers to include. "A lot of times it's stuff we're interested in, but if we had to pick a theme that's general to the selection of the guest characters, one would be that there's a certain dark side to them that seems to match with *Tekken*," he says. Between Akuma, Geese and Negan, we can see it.

» [PlayStation] The little dinosaur was *Tekken*'s first guest star, but his time has obviously been and Gon. [Bad Nick - Ed]



» [PC] If we were picking a guy with a barbed-wire baseball bat, it would have been Cactus Jack.

MASTERFUL MECHANICS

CAREFULLY CRAFTED GAMEPLAY HAS ENSURED THAT TEKKEN IS ALWAYS COMPETITIVE

It may seem crazy if you've never considered it, but gameplay was a secondary concern in the early days of *Tekken*. Long-term readers may remember that back in 2014, Harada told us, "*Tekken* was a project to develop technology for use in 3D character animation, rather than as a 3D fighting game." It's true that *Tekken* certainly feels a little stiffer than its successors these days, but if you were there to experience it in the mid-Nineties, you know that it was a cut above what the majority of other developers were doing in 3D fighting games.

Key to *Tekken*'s success was an intuitive four-button control system, assigning one limb to each button. Speaking to *CVG* in 1998, Hajime Nakatani explained that, "In other games, sometimes players can win by just tapping one single button. We didn't want to make it that easy. So to perform a left-right punch combination, you need to press left punch, then right punch. We wanted to make a more technical game." An early distinguishing feature was each character's ten-hit combo, but the real signature of the series is the air combo – or juggle, if you like. The idea is to use a move that launches your opponent into the air, leaving them unable to block as you hit them for guaranteed damage on the way down.

Tekken 3 changed things up in a subtle but significant way by adding sidesteps, giving players more of an opportunity to take advantage of the 3D space. In that 1998 *CVG* interview, Nakatani explained that the *Tekken 3* development team's goal "was to make this game overall more fun than *Tekken 2*, and take more time than in *Tekken 2* over the balance of characters and overall gameplay". Indeed, Harada remembered things similarly in 2014, saying, "We reworked the game drastically around *Tekken 3* to make it more of a proper 3D fighting game." The feedback needed to transform the series was something that Namco relied on the coin-op crowd for, travelling to arcades to gather opinions.

"Back in the day, we could release in the arcade first, and then for about two years we were able to continually polish the competitive versus fighting of the game," says Harada, in the present day. "Even the opinions, and the playerbase that we got those opinions from, was quite different – they're there to play against other people for one, but also they're paying ¥100 per play and they're focussed solely on that particular mode. It's not like the story or any other stuff, so their opinions are a lot different than the current players that have everything at once," he continues, contrasting the arcade era with today's console-first ethos. "It was a high level of purity, I guess you could say, because they were just focussing on the game system itself and the characters. And so it was a lot easier to then get that part of the game in a good state, before we move it to the console and add the other features."

» [Wii U] We can't forget tag mechanics, but doubles matches are really reserved for special occasions.

» [PlayStation 5] Modes like Arcade Quest in *Tekken 8* are there to catch newcomers up with the game's mechanics.

Tekken 4 offered the first visually obvious change to the *Tekken* formula, abandoning the infinite flat stages of its predecessors in favour of more realistic arenas, confined spaces with walls, sloping surfaces and breakable obstacles like phone booths. The game wasn't well received, and while *Tekken 5* kept walled arenas, it also did away with sloping surfaces, toned down the effectiveness of wall combos and improved air combos. Taking a leaf out of the *Dead Or Alive* playbook, *Tekken 6* introduced breakable walls and floors that reveal extended fighting areas. Speaking of floors, it also added the Bound system, which allowed players to smash a mid-air foe into the ground and continue their combo. Following the trend for comeback mechanics, *Tekken 6* also introduced Rage, a state in which characters with low health deal extra damage.

Tekken 7 developed on the Rage concept by introducing Rage Art and Rage Drive moves, powerful attacks that require you to sacrifice your Rage state. The game also introduced new Power Crush moves, which allow a fighter to absorb an incoming attack in the process of delivering their own in a similar fashion to *Street Fighter IV*'s Focus Attack. Most recently, *Tekken 8* has introduced the Heat gauge, which gives a time-limited boost to certain moves and properties when activated, as well as enabling the aggressive Heat Dash and Heat Smash moves. The new air combo extender this time around is the Tornado, which sees opponents spun around and launched higher in mid-air.

» [PlayStation 5] Rage Art moves are given spectacular camera work befitting their dramatic effect on matches.

» [PlayStation 2] *Tekken 4*'s changes were unpopular at the time, but have been viewed more favourably in recent years.

» [PlayStation] Don't let your opponent fall – hit them again on the way down for an air combo.

A DUELIST'S DISTRACTIONS

TEKKEN HAS ALWAYS INCLUDED SPECIAL EXTRA MODES FOR HOME PLAYERS – HERE ARE SOME OF THE BEST

GALAGA

■ Just as the PlayStation conversion of *Ridge Racer* had included *Galaxian* as a loading screen game, so *Tekken*'s PlayStation port has its sequel. It's not just a fun diversion, though – if you can manage to hit every enemy, you'll unlock Kazuya's third costume, the purple devil gear.

TEKKEN FORCE

■ First introduced in *Tekken 3*, this mode is a short scrolling beat-'em-up that has you beating up the Mishima Zaibatsu's goons. Beat it and you'll unlock Dr Bosconovitch. This concept was later expanded on in *Tekken 5*'s The Devil Within mode and the Scenario Campaign in *Tekken 6*.

TEKKEN BOWL

■ *Tekken Tag Tournament* gave us this particular oddity. It's exactly what you'd expect – adjust your fighter's position, get the spin right, set the power and hope for a strike. It returned in *Tekken: Dark Resurrection* and as DLC in *Tekken 7*, and even found its way to mobile platforms as a stand-alone game.

TEKKEN BALL

■ Originating in *Tekken 3* and most recently spotted in *Tekken 8* where it's playable online, Tekken Ball pits two fighters against each other in a bizarre volleyball-style contest. Whack the ball to charge up some damage and send it over – if your opponent fails to respond properly, they'll take some damage.

» French player Norman 'GEN1US' Chatrier battles it out in a *Tekken 6* tournament he'd eventually win.

COMMUNITY AND COMPETITION

MORE THAN ANYTHING ELSE, IT'S TEKKEN PLAYERS THAT KEEP TEKKEN ALIVE

***Tekken* has always been an exciting game to play, and it's often a thrill to watch too.** With that in mind, it's no surprise that competitive play has been a part of *Tekken* since the early days of the series. It has come a long way, too – while there's no denying that *GamesMaster*'s showcase of competitive *Tekken 3* was worth shouting about in the Nineties, today's top players can enjoy sponsorship deals and fans have access to a wealth of live-streamed events that make it easy to watch the top players in action.

Records on early *Tekken* tournaments are spotty at best, but we know that the scene had produced notable players such as the UK's Ryan Hart by the late-Nineties. The series became a mainstay at the Evolution Championship Series in the early Noughties, when players such as Qudans, Jackie Tran, JinKid and Crow emerged as dominant forces. *Tekken 6* was played in events such as the Major League Gaming Pro Circuit and World Cyber Games as well as events like Evo, and Korean players like Nin and Knee gained worldwide recognition during this era, as well as JDCR when *Tekken Tag Tournament 2* arrived. In more recent years with *Tekken 7* and *Tekken 8*, players from Pakistan such as Arslan Ash and Atif Butt have achieved fame.

Since Harada and the *Tekken* team would solicit feedback directly from players in the arcade scene, it's no surprise that the developers have a hand in how the community has developed over the years. "We've been in charge of building that scene for many years on our side, and it was about not trying to take over and make our own official tournament series, but to find a good way, an effective way, to include the community," Harada tells us. "So for example, on the Tekken World Tour, the community have kind of gathered themselves. One person might decide to do a tournament and they try to get more players – say they get 64 players, then they get a certain amount of points, but if they get 96 players, they get even more points. I think it's a good kind of hybrid way of doing it, where the community is a part of our series, rather than us just having a closed off tournament series run by our company, like some of the competitors probably do."

The increasing popularity of professional gaming has resulted in an increase in opportunities for players too, as Harada notes. "Esports is this word that's really become popular, and it's been able to attract a lot more outside sponsors, which as a result has brought about cool things where some companies other than ours decide that maybe they're going to bring some famous players from Korea to a local event and fight against the local players," he explains. "Things like this are happening a lot more often." While esports isn't a term that all of the fighting game community has embraced, it's hard to deny that the attention has been transformative – some of the prize pools for tournaments would have been truly unimaginable even as recently as a decade

» Players competing at a Tekken Force event in London, way back in 2011.

» Ryan Hart (player one) takes part in a round robin *Tekken 3* tournament on *GamesMaster.*

ago, never mind the notoriety.

"I think these kind of things have always happened inside the community. Back in the day, it used to be people had DVDs that they would share with a certain tournament, or they uploaded footage," says Michael. "But now, I think with the Tekken World Tour, we've been able to focus on pro players and show them to people outside of the *Tekken* community, so that they kind of understand the importance of these stories, like the rivalry between Japan and Korea or the emergence of Arslan Ash from Pakistan, that no one was watching up until he got the spotlight," he elaborates. "So I think just in the current climate, that spotlight has brought a lot of attention to the community, and showed that to outside people and garnered a lot of interest – not just from sponsors, but people who might not have played *Tekken* and just enjoy watching the player storylines that happen." So even if you don't want to chance your arm in combat, you might just enjoy competitive *Tekken* too.

GOING FOR GOLD

OUR DAY OUT AT A TEKKEN TOURNAMENT

Our interview with Katsuhiro Harada and Michael Murray took place at the Red Bull Gaming Sphere in London, where they were guests for the Red Bull Golden Letters invitational tournament. Twenty players from around the world – sixteen invitees and four winners of qualifying events – came together for an event with an unusual twist. By accumulating three 'perfect' or 'great' round victories, indicated by golden letters on the screen, a player could automatically win their match.

A number of spectators came to watch the event, and following the interview we sat with them to watch a level of play we could only dream of attaining. One particularly exciting match pitted Arslan Ash against SourPiggy, one of the players who had to qualify for the event – and it nearly ended in a real upset as SourPiggy's Kuma play was good enough to take things to the very last scrap of life. Despite the fact that the players weren't in the room with the spectators, a round of applause was given for the spirited performance.

In the end the finals came down to Korean player ULSAN, playing Dragunov, and AK of the Philippines who picked Shaheen. AK had pulled through the losers bracket to reach the finals after losing out to ULSAN in the semi-finals, but his efforts ultimately couldn't prevent a repeat performance, with the hard fought match ultimately going 3-1 in ULSAN's favour. Korean player CBM picked up third place, with the UK's Kaneandtrench finishing fourth.

» AK's Shaheen puts the pressure on ULSAN's Dragunov in the tournament final.

» It was a good live turnout, especially considering the event was also being streamed on Twitch and YouTube.

THE EVOLUTION OF RIDGE

RACER

SUCCESSOR TO A LONG LINE OF COIN-OP RACERS, RIDGE RACER BROUGHT MOUNTAIN ROAD DRIFTING TO THE ARCADES AND LED TO A WEALTH OF FOLLOW-UPS. FORMER NAMCO CREATIVES JERRY MOMODA, MIKE FISCHER AND RYOTA TOYAMA EXPLAIN HOW RIDGE RACER EVOLVED

WORDS BY RORY MILNE

» [Arcade] Tight cornering by drifting is an essential aspect of winning races in *Ridge Racer*.

» [Arcade] The set-piece visuals in *Ridge Racer* such as bridges and tunnels were very impressive for the time.

To understand where *Ridge Racer* came from you first have to consider that it was the product of two lineages. From a technical perspective, the groundbreaking polygon racer was the end result of a series of Mazda-endorsed driving simulations that were demoed at Japanese trade shows.

The first of these – the *Eunos Roadster Driving Simulator* – appeared in 1989, and was based around a sit-down cab with three side-by-side monitors, the left and right of which were angled to give the effect of a curved front window. Two even more impressive successors called *Sim Road* and *Sim Drive* arrived in 1992. These sat the driver in real Mazda Roadsters with arcade hardware under their bonnets, and projected a panoramic view of the road ahead in front of their windshields. The following year, these popular attractions provided a template for a $250,000 version of *Ridge Racer*, subtitled *Full Scale*, which in keeping with its immediate predecessors incorporated a Roadster and a projected front screen. In terms of gameplay, *Ridge Racer* was an evolution of Namco's long line of hit arcade racers, including *Pole Position*, *Final Lap* and *Winning Run*.

Former Namco US product manager Jerry Momoda was a big fan of Namco's coin-ops long before he joined its ranks after stints working in the arcade divisions of Nintendo, Sega and Atari, but it was a work-in-progress *Ridge Racer* that convinced him to sign up with the firm. "I always had a lot of respect for Namco; whose games included several of my favourites," Jerry reflects. "I joined Namco in 1993 as the product manager in the new Namco America office in San Jose, California.

"THE CHAIRMAN AND FOUNDER OF NAMCO, MR NAKAYAMA, WAS REALLY INTO MOVIES. I THINK THIS PASSION INFLUENCED THE LOOK AND FEEL OF NAMCO'S GAMES"

JERRY MOMODA

I was teased with an early look at *Ridge Racer*, and I was so impressed. It was state-of-the-art 3D that included texture mapping and Gouraud shading – and all this at 60fps."

Despite his Japanese heritage, the US born, 3rd generation 'sansei', Jerry spoke very little Japanese, and so his communications with Namco in Japan required a translator and involved long shifts. Part of his role was to use his knowledge of what was popular in US arcades to make suggestions to the Japanese *Ridge Racer* team, in order to make sure that Namco's new racer could go toe-to-toe with Sega's. "My counterpart in Tokyo was Kohei Teraoka in the overseas division. He was my 'go-between' for the *Ridge Racer* team and all R&D," says Jerry. "When teams had

» Jerry Momoda was Namco's US product manager for *Ridge Racer*, *Ridge Racer 2* and *Rave Racer*.

» Former Namco US marketing director Mike Fischer's credits include *Ridge Racer Type 4* and *Ridge Racer V*.

» During his time at Namco US, localisation producer Ryota Toyama worked on *Ridge Racer 6* and *7*.

» [Arcade] The day/night cycles in *Ridge Racer* distinguish it from contemporary arcade racing games.

» [Arcade] The helicopters swooping over the tracks in *Ridge Racer 2* are a series standard.

▶ questions and needs, he did the translation. Each morning my day began with faxes from Kohei, and I answered them during my day, which was their night. At about 6pm I would get a phone call from Kohei to discuss new and urgent matters. It was a long day, but I enjoyed my work. Back then, and before having years to reflect on the arc of the series, I would ask for additions and changes to add depth and replay value, as I felt *Ridge Racer* was a bit limited in track offerings to compete with *Virtua Racing*."

The game that Jerry was watching come to fruition incorporated an excited announcer, an animated intro complete with a glamorous race queen, and a news helicopter flying over races. It also boasted an impossibly sunny world that seamlessly incorporated urban, mountainous and coastal areas. It looked like a cinematographer's daydream, which made perfect sense to Jerry. "The chairman and founder of Namco, Mr Nakayama, was *really* into movies and the film industry, and back in the day Namco owned a movie studio," Jerry reveals. "I think this passion influenced the look and feel of Namco's games. *Ridge Racer*'s setting was fictitious. It was partially based on driving in mountainous areas, which was popular at that time in Japan. Sega's successful *Out Run* and *Virtua Racing* were also set in non-race circuit environments."

» [Arcade] One of the most obvious innovations in *Ridge Racer 2* is its very useful rear-view mirror.

Whatever its inspirations, *Ridge Racer* proved to be an unqualified success when it debuted in arcades in 1993. The Japanese trend it channelled of drifting sports cars around winding mountain roads had a global appeal, and the game's cutting-edge visuals wowed players. A sequel was soon put into production, and while *Ridge Racer 2* had a few aesthetic and gameplay-related enhancements, the main effort of its developers went into making it a multiplayer, multi-cabinet version of the original game. "Linking cabinets together to allow multiplayer races was a *big* step for the series," Jerry explains. "Sega already had a linked *Virtua Racing*, so Namco had to match that to stay competitive. Plus, if every location linked two units it would double the number of units sold. Sega was a little bit ahead technology-wise, and Namco was playing catch-up. Back then, the rivalry between Namco and Sega was at its peak. Though secretive in what they were working on, each seemed to know what games the other was making. This rivalry pushed each company to outperform the other with each new game. I believe this competition made each company's games better." An invaluable new feature in *Ridge Racer 2* was the rear-view mirror in the player's car. In the original game, AI rivals could sneak up on players and overtake without giving any notice, but in the follow-up players could spot them approaching from behind and block their way past. So although the addition of a rear-view mirror was minor in terms of differentiating the sequel's aesthetics from the original game's, it gave the races in *Ridge Racer 2* more strategy than *Ridge Racer*'s. "I recall seeing the rear-view mirror for the first time and being impressed, as I knew the team had severe time, memory and processing constraints," Jerry remarks. "There were so many tradeoffs and priorities the team had to consider. Remember that during that time new achievements in technology were happening at a fast clip, so it was exciting to hear and see new achievements as they happened. Each of these things was a learned skill. It wasn't like patching in existing code for a rear-view mirror."

Arcade goers responded enthusiastically to *Ridge Racer 2*'s innovations on its release in 1994, with the prospect of racing up to seven other people being a major draw. As had happened with the original, the popularity of *Ridge Racer 2* ensured that the series continued. The next *Ridge Racer* title, *Rave Racer*, had better graphics than its predecessor, and it ▶

» [Arcade] Unlike its predecessors, *Rave Racer* has rolling hills that cars can fly over at speed.

» [Arcade] *Rave Racer*'s external view of the player's car was first seen in the PlayStation port of *Ridge Racer*.

"LINKING CABINETS TOGETHER TO ALLOW MULTIPLAYER RACES WAS A BIG STEP. SEGA ALREADY HAD A LINKED VIRTUA RACING, SO NAMCO HAD TO MATCH THAT"

JERRY MOMODA

STAGES OF EVOLUTION: NOTABLE SPIN-OFFS (1995-1996)

HIGH-OCTANE OFFSHOOTS FROM THE CORE SERIES

RIDGE RACER REVOLUTION

As well as three new courses, *Ridge Racer Revolution* has a rear-view mirror option like *Ridge Racer 2* and an outside-of-the-car option like Namco's *Ridge Racer* port. There's also a two-player link cable mode, secret unlockable cars and a cool hidden mode where you race beach buggy-like toy cars.

RAGE RACER

As a concession to realism, *Rage Racer* is depicted in darker hues than earlier titles in the series. It also has a credit system, where your winnings let you pay for upgrades and better cars. Progress through the game's five classes of events requires top-three finishes in each one.

POCKET RACER

A coin-op version of *Ridge Racer Revolution*'s Buggy Mode, except that *Pocket Racer* makes allowances for its young target audience. Your buggy bounces off roadsides without losing speed, and rivals spin out when you hit them and slow down after passing you,

STAGES OF EVOLUTION:

NOTABLE SPIN-OFFS (2000-2004)

COOL GAMES FROM THE RIDGE RACER FRANCHISE

RIDGE RACER 64

In addition to recreating the courses in *Ridge Racer* and *Ridge Racer Revolution*, *Ridge Racer 64* has a unique set of desert tracks and an additional track that incorporates city and bay area environments. The N64 title also has a multiplayer split-screen mode for up to four players.

R: RACING EVOLUTION

As well as having licensed cars instead of fictional models, *R: Racing Evolution* includes a story mode with cutscenes. Tying into this approach is a Pressure Meter that fills up as you get near to competitors, which can cause them to hurl abuse and even lose control of their car.

RIDGE RACER

Although the PSP's *Ridge Racer* predominantly consists of tracks, cars and music from earlier titles, those courses and vehicles are visually enhanced, and the tunes are remixed. A brand-new feature is that drifting gradually fills Nitrous tanks, that when full, allow you to use a Nitrous Boost.

» [PlayStation] You can speed around tight bends with the grip-type cars in *Ridge Racer Type 4*.

allowed players a choice of which car they raced in for the first time in the series. Another arcade first was that they could select an external view of their vehicle as well as an internal one, and *Rave Racer* had two new tracks in addition to nicer-looking versions of the earlier games' courses. Although seemingly incremental in nature, these changes required great effort on the part of the *Ridge Racer* team. This was reinforced for Jerry when he visited Japan, but it was quite simply the price of keeping the series competitive. "Part of my job was being the voice of the player, so I was always reviewing our competitors' games against what Namco was offering," Jerry notes. "I knew the team knew better than I did about what Sega was doing, but I conveyed what I observed and learned from talking to US players on location. Fortunately I got to see games in development when visiting R&D in Japan, so I had a real appreciation for what they were doing, and the time and effort that it took. They used to spend *crazy* hours at the office. It wasn't uncommon for teams to sleep at work during crunch times."

One aspect of *Rave Racer* remained true to the earlier *Ridge Racer* titles, in that its developers gave its new tracks urban and mountainous settings, a choice Jerry partially puts down to the Nineties Japanese trend that was the focus and appeal of the *Ridge Racer* series. "They kept the mountain tracks because of the fascination at the time with drifting and driving sports cars through mountains along windy roads," Jerry points out. "Also, there

» [PlayStation] Depending on the team you join in *Ridge Racer Type 4*, third place may be viewed as a failure.

was limited graphics processing power, so environmental choices were probably as much a technical concern as an artistic one."

When it was released in 1995, *Rave Racer* went down well with gamers, especially in Japan where it became the highest-grossing dedicated arcade cabinet of 1996. But despite this popularity, its successor was developed for consoles rather than as a coin-op. This process had begun in 1994 when a conversion of *Ridge Racer* helped launch the PlayStation. Then in 1995 and 1996 the Sony system received *Ridge Racer Revolution* and *Rage Racer*, which adapted various aspects of *Ridge Racer 2* and *Rave Racer*. However, Namco's follow-up was the entirely original *Ridge Racer Type 4*, and it had serious competition in the console space, as former Namco US marketing director Mike Fischer remembers. "I joined Namco right as it was getting ready for the final stages of shipping the third *Ridge Racer* console title, but I was much more hands-on with *R4*," Mike recollects. "It was a magical time to be at Namco. I think there was always a special place in Sony's heart for *Ridge Racer*, so partnering with them was really wonderful, but we had a little bit of an identity crisis. We were trying to figure out what our game meant to users in a world where *Gran Turismo* was so large scale, so realistic and so beautiful that really nothing could compete. So there were all kinds of crazy features in *R4*. You could connect two PlayStations with a cable, and the two-player split-screen became four-player split-screen. You could even connect a second controller and use it as a gas pedal by stepping on one of the buttons. We also brought out the Jogcon, and the hardcore fans loved that."

As well as novelty, *Ridge Racer Type 4* had longevity thanks to a narrative-driven Career Mode, which challenged players to race for different teams with very different expectations of their drivers. Further replay value was ensured by the sequel's vast number of cars, which were unlocked gradually by driving for each of the game's rival teams. "I was all for adding in the story modes to *R4* and beefing it up," Mike enthuses. "It made the game more replayable and it meant it would take people longer to play. So as a consumer products marketer I was very happy. Again, we were trying to compete more with *Gran Turismo* head-to-head. It often took us in different directions in terms of player experience, and I was thrilled to do that. There was an enormous amount of depth to *R4*, but at its heart it was an arcade game. So by making it such a rich, deep experience the developers really created a lot of added value." ▶

"I WAS ALL FOR ADDING IN THE STORY MODES TO R4. IT MADE THE GAME MORE REPLAYABLE AND IT MEANT IT WOULD TAKE PEOPLE LONGER TO PLAY"

MIKE FISCHER

» [PlayStation] The drift-type cars in *Ridge Racer Type 4* are ideal for meandering s-bends.

*Mode : Comment
*Message
Welcome... Let me start by making one thing clear. RIS is a team for the chosen few.
Directional Buttons : Select
O Button : O.K.
X Button :

Another aspect of the sequel that added value was the high profile that the game gave to its fictional race girl Reiko Nagase. But despite featuring heavily in the game's marketing and gaining a cult following after the game's successful 1998 release, it was decided that Reiko should be replaced for the follow-up *Ridge Racer V*. However, this didn't entirely go to plan. "In *Ridge Racer V* we changed to a new race girl, and the Japanese team sent us all kinds of incredible concept art," Mike comments. "It was beautifully rendered CG art, but then at some point we got this urgent midnight phone call telling us to stop everything, not to release any art and to not let anyone see it. What had happened was that her necklace was modelled off a real piece of Tiffany jewellery. I don't know if they had been notified by the Tiffany Corporation or if in the course of internal work somebody asked about it, but they had to go back and re-do *all* of her art."

» [PlayStation 2] In *Ridge Racer V*'s Easy Mode it takes a lot less effort to get to the front of the pack. [That's why I always use it – Ed]

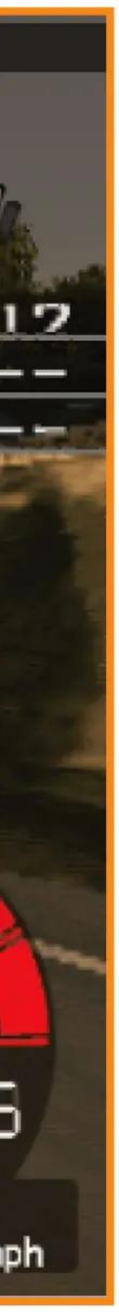
» [PlayStation 2] The Time Attack mode in *Ridge Racer V* is a great way to practice the game's courses.

As was the case with *Ridge Racer Type 4*, *Ridge Racer V* had to compete with the latest *Gran Turismo* title, but licensing hundreds of cars like the *Turismo* games wasn't an option. The *Ridge Racer* team's solution was to use this potential set-back to their advantage. "We couldn't have licences to real cars, so we created fictional ones, and as a result we could let those do things that real cars could never do," Mike explains. "They could accelerate better, they could brake better and

» [PlayStation 2] Despite its relaxing settings, taking first place in *Ridge Racer V* can be an intense challenge.

» [Xbox 360] As well as taking you around bends, drifting gets you Nitrous Oxide in *Ridge Racer 6*.

» [Xbox 360] The illuminated tunnels in *Ridge Racer 6* are common to many titles in the series.



> *"WHILE V MAY NOT HAVE HAD AS BROAD AN APPEAL AS THE ULTIMATE DRIVING SIMULATOR GRAN TURISMO IT OFFERED A VERY UNIQUE AND DIFFERENT EXPERIENCE"*
>
> **MIKE FISCHER**

they could handle in different ways. So while *V* may not have had as broad an appeal as the ultimate driving simulator *Gran Turismo* it offered a very unique and different experience for a lot of people that just couldn't handle that simulation. So not licensing cars liberated us, we didn't have to make super-realistic car performance. Instead we could give people a thrill far beyond what a simulation could do."

As well as winning plaudits for its points of difference, *Ridge Racer V* was nominated for multiple awards when it came out for the PS2 in early 2000. Later in the year it was adapted for arcades, where it was renamed *Ridge Racer V: Arcade Battle*. Spin-off *Ridge Racer* titles in the form of *R: Racing Evolution*, *Ridge Racer* (PSP) and *Ridge Racer DS* followed in 2003 and 2004, and then the core series continued with *Ridge Racer 6*. Besides differentiating itself with fresh features, it also broke with tradition by being an Xbox 360 exclusive launch title, as former Namco Bandai US localisation producer Ryota Toyama details. "*Ridge Racer* had historically been released on PlayStation as a launch title, so *Ridge Racer 6* was a complete departure from the regular way of doing things," Ryota reviews. "Microsoft was trying to establish the Xbox 360 as the main console in the US, so it was trying to at least have *Ridge Racer 6* be on par with all the previous versions of *Ridge Racer*, and maybe even have more by adding new features. So not just new courses, but also new gameplay modes and stuff – Reiko Nagase was still big back then, and having an HD cutscene with her was something new. So that was some of the feedback I relayed from Microsoft to the dev team."

Other major new features introduced in *Ridge Racer 6* included its non-linear structure, where players entered races marked on a map with the aim of unlocking adjacent races. There were also No-Nitrous events, where winning depended purely on racing skill, although these weren't compulsory. "A lot of Japanese games had linear progression, but people were starting to say they needed more freedom," Ryota observes. "So I think the branched structure was the team's effort in adding some choice for the player in ▶

STAGES OF EVOLUTION: NOTABLE SPIN-OFFS (2004-2006)

TAKE THESE RIDGE RACER TITLES FOR A SPIN

RIDGE RACER DS

In many ways, *Ridge Racer DS* is a nicer-looking version of *Ridge Racer 64*, but it differs from the N64 title in some respects. First and foremost are the DS game's touch-screen controls and wireless multiplayer, but more interestingly it includes new Namco and Nintendo-themed cars.

CRITICAL VELOCITY

Imagine *Ridge Racer* meets *Chase HQ* and you have a very good idea of what *Critical Velocity* is all about. As it was developed by the PSP *Ridge Racer* team it's unsurprising that *Critical Velocity* features a car commonly featured in the *Ridge Racer* games in the form of the Soldat Crinale.

RIDGE RACER 2

Taking the approach that bigger is better, *Ridge Racer 2* retains all 12 tracks of its PSP predecessor, and adds nine more drawn from the series' past. It also has 62 cars to its predecessor's 17, and it boasts new racing events like Survival Mode, where trailing cars are disqualified.

» [Xbox 360] You can trigger a Nitrous Boost in *Ridge Racer 6* when you fill one of your car's NO2 tanks.

STAGES OF EVOLUTION:

NOTABLE SPIN-OFFS (2009-2011)

ESSENTIAL ON-THE-GO RIDGE RACER EXPERIENCES

RIDGE RACER ACCELERATED

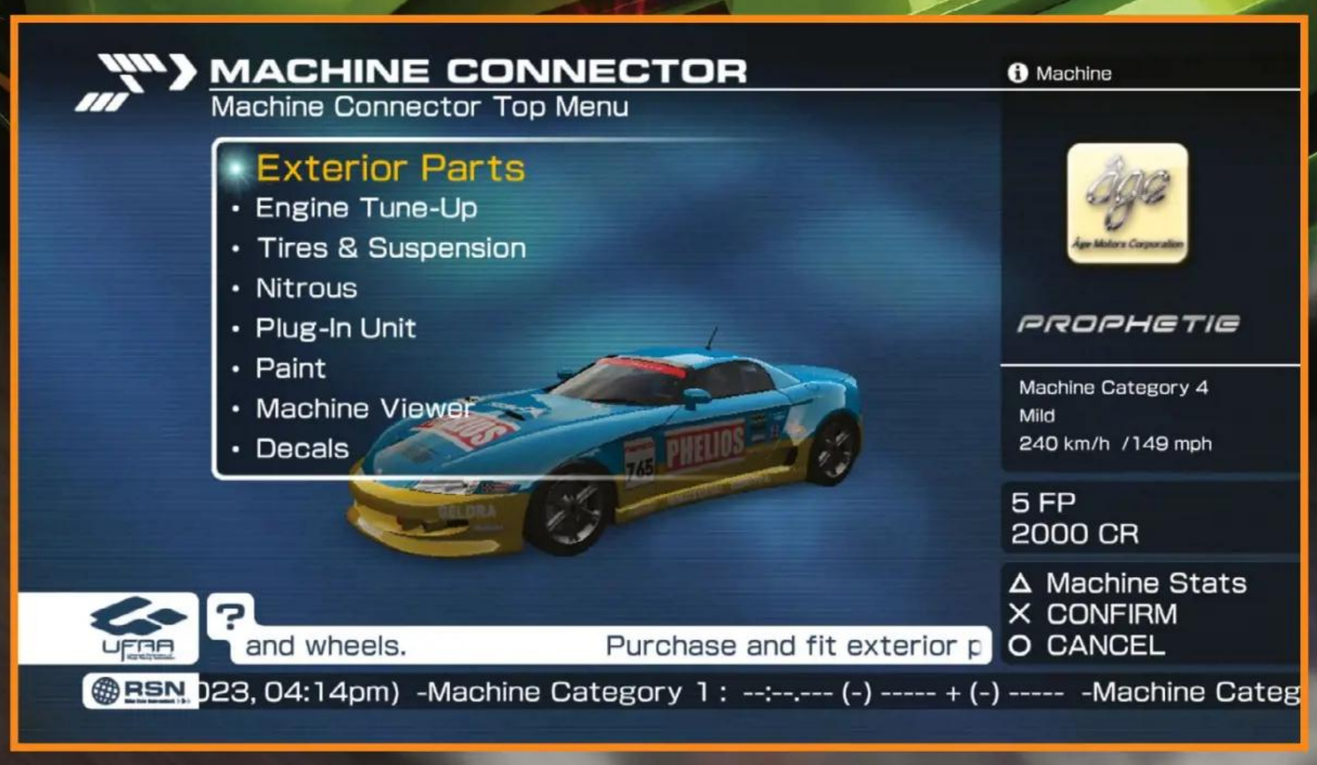
Essentially, *Ridge Racer Accelerated* is a mobile iteration of the PSP *Ridge Racer 2*, although it has fewer courses and cars. Where it differs more is with the way you control your car, with options including tilting your device, using on-screen buttons and manipulating a slider bar.

RIDGE RACER DRIFT

Considering *Ridge Racer Drift* runs on Java, it's impressive how much of the *Ridge Racer* experience the game retains. There's a genuine sense of speed, convincing drifting and Nitrous-fuelled bursts of speed. *Ridge Racer Drift* even looks the part, despite it mainly being sprite based.

RIDGE RACER 3D

Aside from being depicted in 3D, this 3DS exclusive offers a number of other firsts. It has six new modes, including One-Make Race, where you race against a field of opponents driving the same type of car as you. The game also offers different levels of drift, from mild to dynamic.



» [PlayStation 3] Unlike earlier games in the series, you can customise the cars in *Ridge Racer 7*.

» [PlayStation 3] Tailing rivals in *Ridge Racer 7* produces slipstream that cuts wind resistance and increases your acceleration.

how they played the game. We also needed to add some depth by adding different modes and difficulties, to make sure people could continue playing the game for a long time – so I wasn't complaining about players not being able to use Nitrous in some races! The *Ridge Racer* series had been easy to play, and that was popular in Japan. However, US gamers wanted to keep trying until they succeeded, and they would want that from *Ridge Racer 6*. So we were trying to figure out a balance."

In 2005's crowded field of Xbox 360 racers, *Ridge Racer 6* did well to distinguish itself from its rivals, however its follow-up *Ridge Racer 7* returned to the PlayStation line as a launch title for the PS3. Slipstreaming was introduced, which made blocking cars behind you as players had in the earlier games redundant, and strategy was added to how players gained Nitrous. "In the earlier *Ridge Racer* games, it was all about trying not to bump into the walls and then using your Nitrous at the correct time," Ryota assesses. "The blocking in the early games was funny, because that was a big strategy at the time! But slipstreaming actually added a little bit *more* strategy into your racing, so you weren't just simply using Nitrous but you were using your opponents to your advantage. Then I think having to drift *more* to get Nitrous appealed to many players out there. In a sense it made things a little easier in terms of winning the

» [PlayStation 3] As with many later *Ridge Racer* games, *Ridge Racer 7* is notable for its novel car designs.

» [PC] Uniquely for the series, ramming other cars is rewarded in *Ridge Racer Unbounded*.

» [PC] One of the many modes in *Ridge Racer Unbounded* is a test of your drifting abilities.

races, but rushing through the corners with the perfect drift was the definition of *Ridge Racer*, so I think it worked well."

These gameplay innovations aside, *Ridge Racer 7* also tapped into a trend for urban races, where drivers would personalise every aspect of their cars. "We knew that street racing and customisation was a big thing," Ryota says. "So we did adopt that into *Ridge Racer 7*, but we didn't want to overdo it, because it would pull the series away from what it was supposed to be. In that sense, the customisation wasn't as robust as in other games out there, which I think might have been a good thing. Otherwise it would have lost its identity as a *Ridge Racer* game."

This last point wasn't lost on impressed critics and players, and their appreciation was reflected in *Ridge Racer 7* winning an award for being the best PS3 racing game of 2006. No less than eight *Ridge Racer* games have appeared since, although there haven't been any more core titles. 2012's *Ridge Racer Unbounded* qualified for some due to having some late-on participation from the Tokyo-based *Ridge Racer* team, but the superlative combat racer wasn't originally a *Ridge Racer* game and was far more the work of the Finnish developer Bugbear. Indeed, *Unbounded* proved to be quite the divisive title on release as its focus on aggressive driving and destructive environments meant it shared more in common with the likes of *Burnout* and Bugbear's own *Flatout* series than Namco's own series, and yet it remains a lot of fun when you take it on its own merits.

> *"SLIPSTREAMING ADDED A LITTLE BIT MORE STRATEGY INTO YOUR RACING, SO YOU WEREN'T JUST USING NITROUS BUT YOU WERE USING YOUR OPPONENTS TO YOUR ADVANTAGE"*
>
> **RYOTA TOYAMA**

This lack of new core titles in the long-running series is something Ryota feels strongly about. "It's sad that we haven't seen any new *Ridge Racer* games recently," Ryota sighs. "Maybe it's because *Ridge Racer* was an arcade-style game, and nowadays even in Japan we don't have as many arcades as we had before. I think the culture has just shifted."

The way that former Namco US product manager Jerry Momoda views the original *Ridge Racer* is celebratory by comparison. His memories of the game that convinced him to join Namco US are of good times, and he's ideally suited to explain the enduring popularity of Namco's series. "I look back at *Ridge Racer* in a nostalgic way, when I see it now I think about what I was doing at the time," Jerry beams. "I still play racing games and I still love them. I also still appreciate what *Ridge Racer* is. The fact that you keep coming back to play it is the secret sauce of arcade videogames." ✱

STAGES OF EVOLUTION: NOTABLE SPIN-OFFS (2011-2016)

INTERESTING TAKES ON THE RIDGE RACER FORMULA

RIDGE RACER

It got some stick for relying on DLC, but once you have that the PS Vita *Ridge Racer* has a lot going for it. There's a good feel to the driving, drifting, Nitrous boosting and slipstreaming, and its core objective of finishing in top positions to unlock upgrades is a great incentive.

RIDGE RACER SLIPSTREAM

The name *Ridge Racer Slipstream* refers to the title's focus on slipstreaming, where you tail opponents to reduce wind resistance and boost acceleration. It works like in the earlier games, but the effect is far greater, and it can be the difference between winning and losing races.

RIDGE RACER DRAW & DRIFT

You draw routes around *Ridge Racer Draw & Drift*'s courses on the touch-screen pre-race – the faster you draw, the faster you drive in the races. These involve tapping the screen to drift when your car hits drift zones of various widths, with accurate taps being rewarded with Nitrous.

INSIDE THE PlaySta7

TWENTY-FIVE YEARS AGO SONY LAUNCHED A CONSOLE THAT ENCOURAGED DEVELOPERS TO DREAM BIG, AND CAUSED THEM THE ODD NIGHTMARE. SPEAKING WITH DEVELOPERS WHO TACKLED ITS TRICKY TECHNOLOGY, WE DISCOVER WHAT IT WAS LIKE TO CREATE GAMES FOR A CONSOLE THAT TRULY TRANSFORMED WHAT WAS POSSIBLE IN VIDEOGAMES

WORDS BY NICK THORPE

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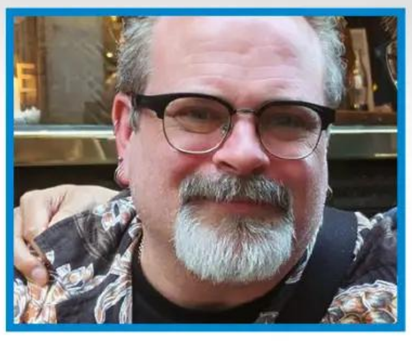
Few consoles in the history of videogames have had the impact of the original PlayStation. It wasn't the first console to offer 3D graphics and CD-ROM technology, but it was a highly capable machine that was much easier for developers to work with than Sega's overly complex Saturn, and cheaper for players to buy. Though the Nintendo 64 had a clear advantage in overall power, the CD-ROMs used by Sony's console offered storage capacity that cartridge-based N64 games couldn't match, as well as cheaper games for consumers. By the end of 1998, the success of the PlayStation had catapulted Sony ahead of Nintendo and Sega into a position of market leadership, and with 50 million units sold it was well on its way to becoming the best-selling home console of all time.

Sony's rivals weren't taking that success lightly, and Sega had already launched the Dreamcast in Japan. Excitement grew to see how Sony would respond, and on 2 March 1999, Sony announced a "next generation PlayStation system" – not yet known as the PlayStation 2. Sony claimed that the hardware "massively increases the quality and performance of graphics technology to the maximum level that can be enjoyed on a television set" and possessed "the revolutionary ability to generate worlds, characters, behaviours and complex physical simulations in real-time via the massive floating-point processing power of the system".

The manufacturer explained that the system was capable of calculating digital wind that would affect characters' clothes and hair in real-time, and could perform "accurate simulation of different materials such as water, wood, metal and gas" as well as gravity, friction and mass. "This concept is called 'Emotion Synthesis' which allows the system to simulate not just how the images look, but how the characters and objects in a game think, act and behave," the press release explained. "Imagine walking into the screen and experiencing a movie in real-time … this is the world we are about to enter." Developers would get their development kits, enabling them to get to work on delivering Sony's lofty promises, in the spring of 1999.

Various developers produced tech demos to show off what the new system could do. Squaresoft showed a real-time version of Squall and Rinoa's dance sequence from *Final Fantasy VIII*, and a brawler that would later become *The Bouncer*. Namco contributed a brief catwalk sequence starring *Ridge Racer*'s Reiko Nagase, as well as a *Tekken* fight sequence in which Jin and Paul fought in a full 3D arena surrounded by cheering spectators. An enormous amount of hype built up prior to the launch of the PlayStation 2 over the year that followed, with the system eventually launching in Japan on 4 March 2000, to be followed by North American and European launches on 26 October and 24 November respectively.

Of course, you likely know how the story goes from there. The PS2 is still the world's best-selling home console, and amassed an eclectic and excellent library of games over its lifespan. However, the immense hype led to initial disappointment – speaking to *Edge* shortly before the North American launch of the console, Lorne Lanning of Oddworld Inhabitants expressed his opinion that early games were "far from impressive relative to public expectations of the system". His studio was working on *Oddworld: Munch's Oddysee* for the console at that time, and as he saw it, the problem was the hardware. "Our experience, as well as that of all the developers that we've talked with, is that ▶



JIM BULMER

n The Getaway, *The Getaway: Black Monday*

CHUN WAH KONG

n *The Getaway, The Getaway: Black Monday*

DUGAN JACKSON

n *2002 FIFA World Cup, Vietcong: Purple Haze*

JULIAN SCOTT

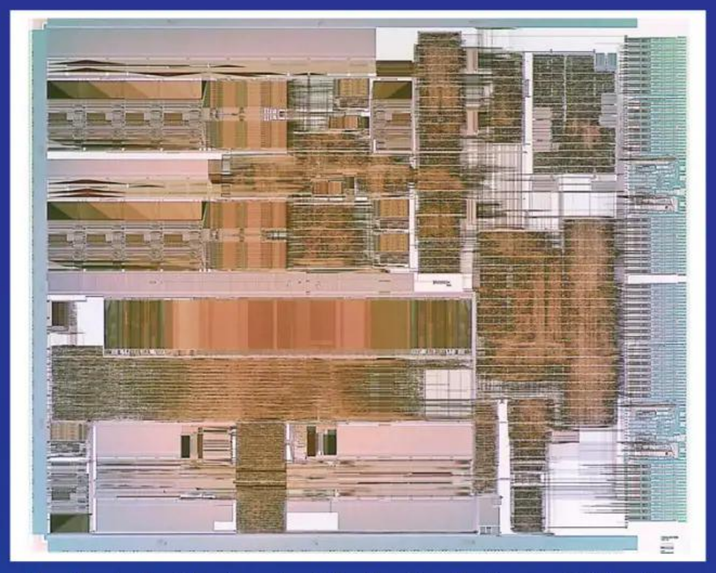
n *Starsky & Hutch*

RICHARD MARKS

n EyeToy

» [PlayStation 2] *Ridge Racer*'s Reiko Nagase was the star of an early tech demo by Namco.

» [PlayStation 2] This tech demo shows off terrain that has been procedurally generated, rather than using pre-defined geometry.



» Here's a look at the innards of the Emotion Engine, containing the console's CPU and more.

it is a difficult system to program for," he claimed, adding, "You wind up spending a lot of time and money in areas that you expected to be available in basic hardware functionality and dev system tools." The studio eventually abandoned the console in favour of Microsoft's Xbox.

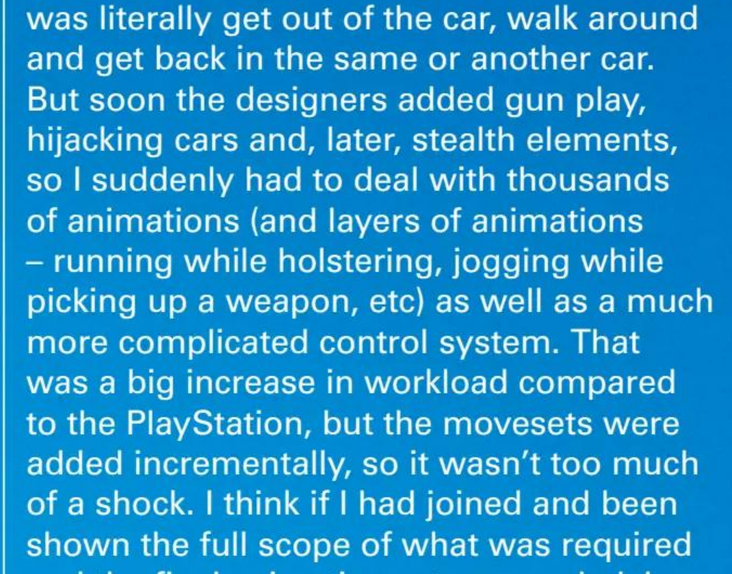
Steve Ellis of Free Radical Design, also speaking to *Edge*, conceded that, "Given the complexity of the hardware, it will take time before people produce games that do the system justice." However, he was more positive, saying, "I think a lot of developers have had problems because they tried to port over their PC engines and found that you need to do things in a fundamentally different way on the PS2. Sure, it's difficult to program for, but if that bothers you, you're in the wrong job." Referring to his studio's game *TimeSplitters*, he said, "We've been able to make every decision based on what would be best for a PS2 game, and I think the results speak for themselves." The first-person shooter was one of the most warmly received early releases for the console.

As predicted, more ambitious software was in the works and it did take a while to arrive. The truth is that it wasn't just difficult to adjust to the new hardware, but the increased player expectations that came with the more capable machine vastly increased the scope of PlayStation 2 projects compared to PlayStation games. "The change in format had a massive effect on the ambition of *The Getaway*," says Chun Wah Kong, lead designer on *The Getaway* – a project that transitioned from the original machine to the PS2. "The game which preceded *The Getaway* on the PlayStation was conceived as a traditional arcade lap-based racer. However, after a project review we transitioned to a narrative-driven experience featuring city driving, a cops-and-robbers theme, with an on-rails third-person gallery shooter for the interior sections. From that *The Getaway* was born."

Prior to working on *The Getaway*, programmer Jim Bulmer had worked on a PlayStation project at Codemasters. "On *Prince Naseem Boxing* we had only about five programmers, so we were forced to multi-task. I was in charge of the player controls (including the animations), as well as the camera, front-end menus, including character selection screens and loading the assets," he recalls. "Because of the increase in size and scope of the PS2 titles, jobs started to become more specialised," he continues. "We had double the number of programmers and I was basically just allocated one task, the player character/controls. This turned out to be a large task, encompassing shooting, dealing with environment context and animations, as well as animation management, but it was essentially one area of the project. Someone else handled AI, someone else handled the menus, sound, vehicles, etc.

"When I joined it was basically a driving game but then they decided they wanted the player to get out of the car and walk around. I was put in charge of this. Initially it was literally get out of the car, walk around and get back in the same or another car. But soon the designers added gun play, hijacking cars and, later, stealth elements, so I suddenly had to deal with thousands of animations (and layers of animations – running while holstering, jogging while picking up a weapon, etc) as well as a much more complicated control system. That was a big increase in workload compared to the PlayStation, but the movesets were added incrementally, so it wasn't too much of a shock. I think if I had joined and been shown the full scope of what was required and the final animation set we needed, I would have run away!"

"The game I worked on before *The Getaway* was *Lander* for Psygnosis, developed by a team of about 15 people over two years," says Chun. "In contrast, *The Getaway* had a team of around 60 people at our office in Soho. That doesn't include all the behind-the-scenes people and consultants who helped us cast over



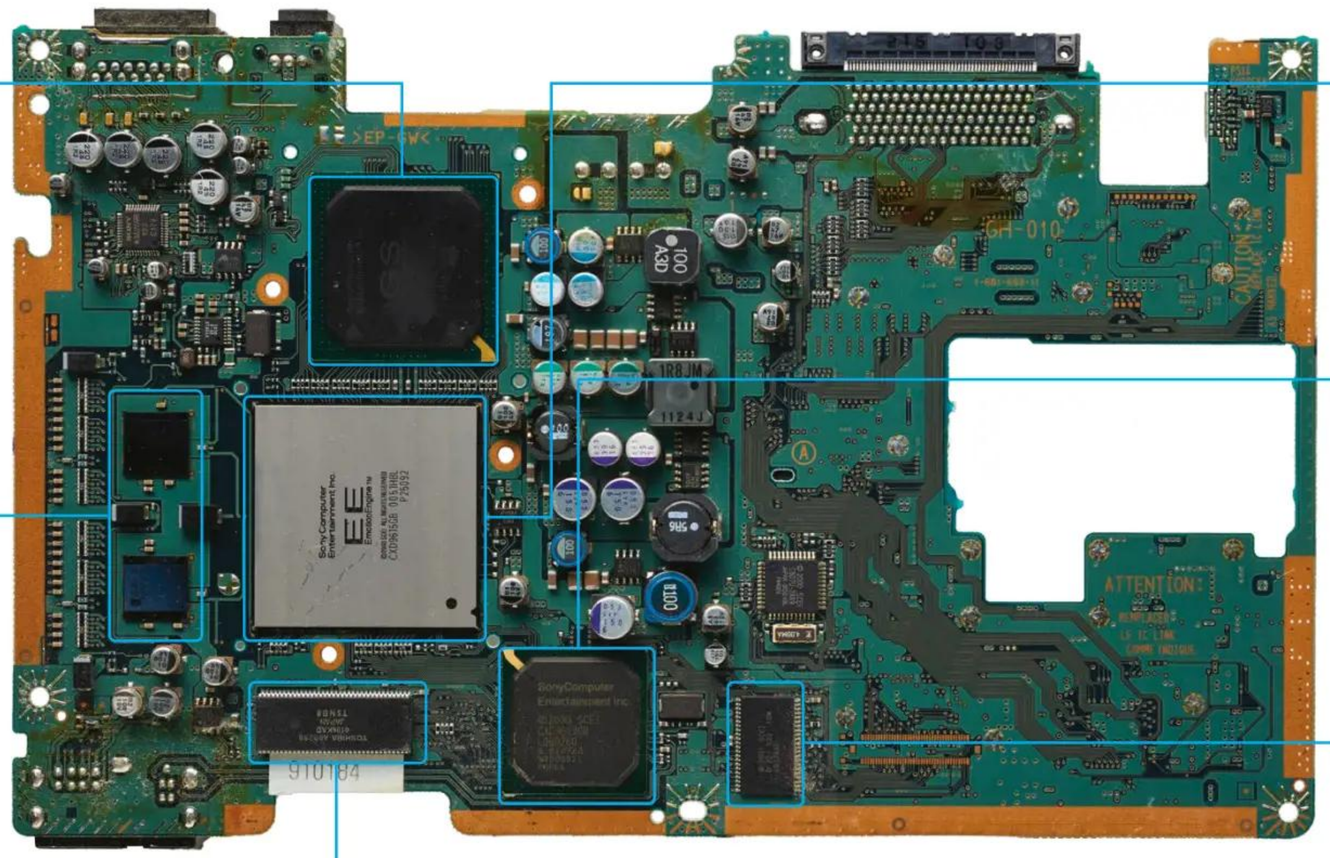
» This is what's inside the Graphics Synthesizer, the PS2's polygon-drawing powerhouse.

» [PlayStation 2] Launch game *Fantavision* looked good and played well, but players expected more from the hardware.

» [PlayStation 2] Online games like *Twisted Metal: Black* were present early on, but networking required an add-on before the slim PS2.

EMOTIONAL INTELLIGENCE

THE KNOWLEDGE YOU NEED ON THE CHIPS THAT POWER YOUR PLAYSTATION 2



GRAPHICS SYNTHESIZER

■ The graphical processor of the PS2 is clocked at 150MHz and contains 4MB of embedded DRAM. It has a very fast fill-rate of 1.2 gigpixels per second, with Z-buffer, alpha blending and textures.

32MB RDRAM

■ This is the main memory for the console, and is set up as two 16MB chips with a dual channel bus – each 16-bit, clocked at 400MHz.

2MB RAM

■ This chip is memory dedicated to the I/O processor.

DVD DRIVE CONNECTOR

■ The system's DVD drive is connected via a ribbon cable. It reads DVD-ROM at 4x speed and CD-ROMs at 24x speed. The high CD-ROM read speed can be utilised to load PlayStation games faster.

HARD DISK CONTROLLER

■ Used to interface with the hard disk when installed.

2 MB RAM

■ Another memory chip, dedicated to the SPU2.

MECHACON

■ This chip controls the DVD drive mechanism, but also fulfils a range of other functions including game disc security and MagicGate memory card security.

EMOTION ENGINE

■ The CPU of the PlayStation 2, which also contains both vector units, the DMA controller and the Image Processing Unit (IPU) that is responsible for fast decoding of MPEG-2 data.

I/O PROCESSOR

■ This 32-bit MIPS-3000 processor handles controller and USB inputs, memory card usage and more. It's the same CPU as used in the original PlayStation, and is also used for backwards compatibility.

DVD ROM

■ This 4MB chip contains the DVD player software for the console. The earliest model of the console didn't include this, so player software had to be installed on the user's memory card.

EXPANSION CONNECTOR

■ This is used to connect the PS2 Network Adaptor, which adds an Ethernet port and a connector for an IDE hard disk. Earlier models featured a PCMCIA slot and didn't include the expansion bay.

POWER BOARD CONNECTOR

■ Power supply hardware is found on a secondary circuit board, which is connected to the main motherboard here. The cutout section above it is where the system's cooling fan sits.

AV CONNECTIONS

■ Sony's custom AV multi-out port allows for composite, S-video, RGB and component video output from a single port. A TOSLINK port provides digital output for high-quality audio.

DSP

■ The Digital Signal Processor is used for processing signals from the DVD drive.

CONTROLLER/MEMORY CARD PORT CONNECTOR

■ These essential ports are connected to the motherboard by a ribbon cable. Games tend to happily use both PlayStation and PS2 controllers, but you'll need appropriate memory cards for each format.

USB PORTS

■ Two USB ports, using the USB 1.1 standard, used to connect peripherals such as the EyeToy. This revision of the hardware has already removed the iLink port that was situated next to them.

SPU2

■ Responsible for the system's audio, the Sound Processing Unit 2 improves on the original PlayStation's audio with 48 channels and support for 48KHz sample rates.

BIOS ROM

■ This 4MB ROM chip contains the console's system software, which you'll use when managing memory card data and changing system settings such as the date, time and video output format.

» [PlayStation 2] This blur effect was added for the PS2 version of *Dead Or Alive 2*, showcasing its special effects prowess.

» [PlayStation 2] Treasure coaxed this unusual pencil shading effect from the console for *Freak Out*.

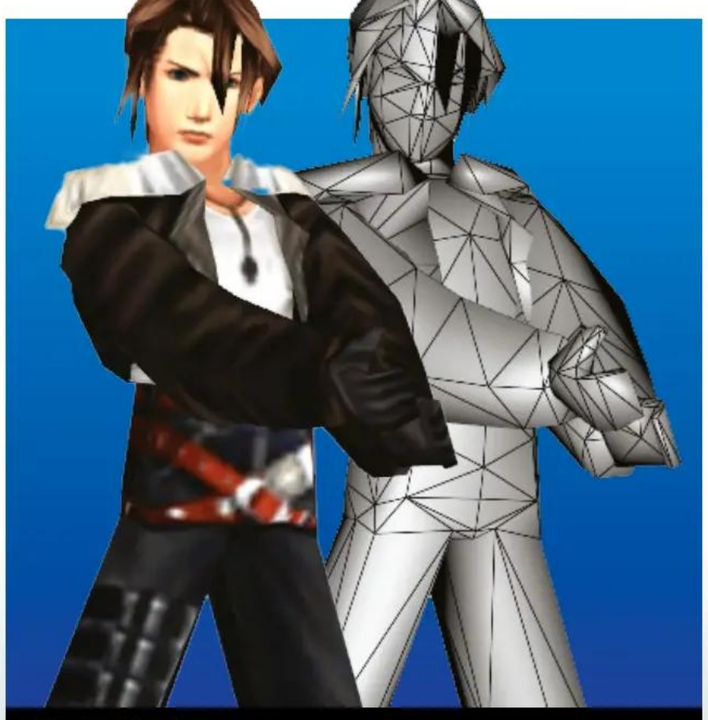
» [PlayStation 2] The *Final Fantasy VIII* tech demo promised in-game visuals on par with PlayStation FMV.

a dozen actors. We worked alongside a motion-capture company, costume and make-up, stunt people, the legal and licensing department that secured cars, locations and cross-promotions with clothing brands," he recalls. "We also collaborated with police consultants, weapons specialists; voice actors in various languages; the London Sessions Orchestra. I haven't mentioned all our hard-working producers and testers from all the different territories. I'm sure I've overlooked quite a few others. In total, there were easily a few hundred people involved, while I probably only met half of them. It was a quantum leap from *Lander*, which had been completed just three years earlier."

The *Getaway* was a first-party project that represented the high end of developer ambition, but even less elaborate productions involved longer development time and more staff than before. Julian Scott, who was a programmer on *Starsky & Hutch* and its cancelled sequel at Mind's Eye Productions, says, "I think we had maybe eight programmers on these games, so not massive. At least three or four worked on tooling, as we were writing the engine/editor

MODEL STUDENT

WHAT CAN CHARACTER MODELS TEACH US ABOUT THE 3D GRUNT OF THE PS2 AND ITS PREDECESSOR?



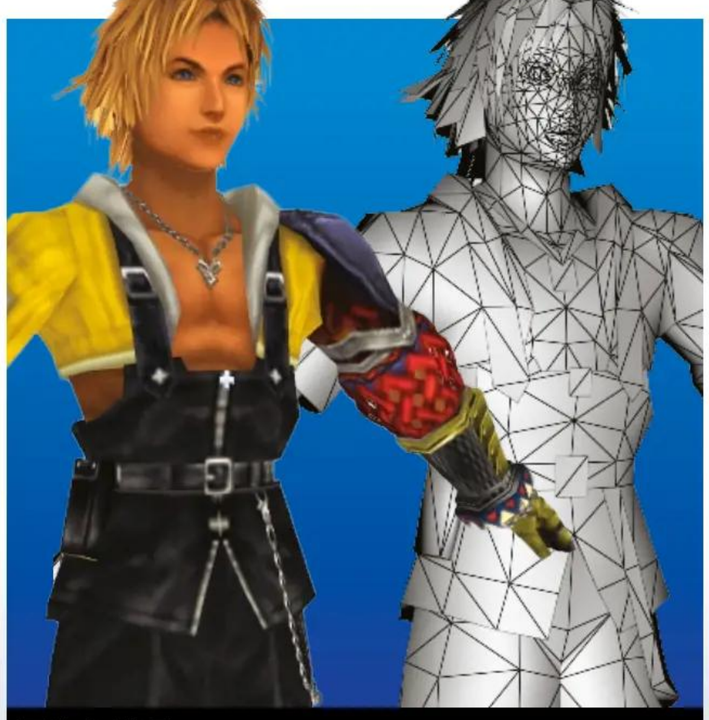
SQUALL

FINAL FANTASY VIII 1999

STATS

903 TRIANGLES
TWO TEXTURES (BOTH 128X128)

Final Fantasy VIII was considered to be one of the most attractive PlayStation games in its day, drawing praise for adopting a more realistic and detailed art style than its predecessor.



TIDUS IN-GAME

FINAL FANTASY X, 2001

STATS

3012 TRIANGLES
ONE TEXTURE (256X256)

Thanks to the power of the PlayStation 2, Tidus sports a character model that blows his predecessor out of the water, with over three times the polygonal detail and twice the texture detail.

TIDUS CUTSCENE

FINAL FANTASY X, 2001

STATS

9749 TRIANGLES
TWO TEXTURES (512X256 AND 256X256)

Outside of gameplay, the PS2 can handle a significantly more-detailed model, allowing the use of real-time graphics for cutscenes rather than the pre-rendered FMV sequences of the PlayStation game.

» [PlayStation 2] It took a while, but *Tekken 4* delivered on the vision of the earlier tech demo.

stuff from scratch too. On the actual PS2 side we maybe had three who were actually doing anything performance-critical." His previous projects on the PlayStation and Dreamcast had "perhaps half the staff".

For artist Dugan Jackson, it depended on the project. "*2002 FIFA World Cup* was the first time for me working with a larger team. We were doing the back end of the game for EA Vancouver and the team really had to be ramped up with a mix of existing employees and new hires," he recalls. "Development time was a big change too. The previous title I worked on was *Tweenies* for PlayStation which was a crazy four or five-month duration. That meant very little time for polish or revision. On *FIFA* we not only were working to a higher hardware spec, but also having more thorough progress reviews both internally and with EA to ensure we pushed the quality level of every aspect we were dealing with." There was still room for smaller projects, though. "The next PS2 title I worked on, *MTV Music Generator 3*, was a much smaller team of three coders and two artists, and we built that all from scratch with no pre-existing game engine."

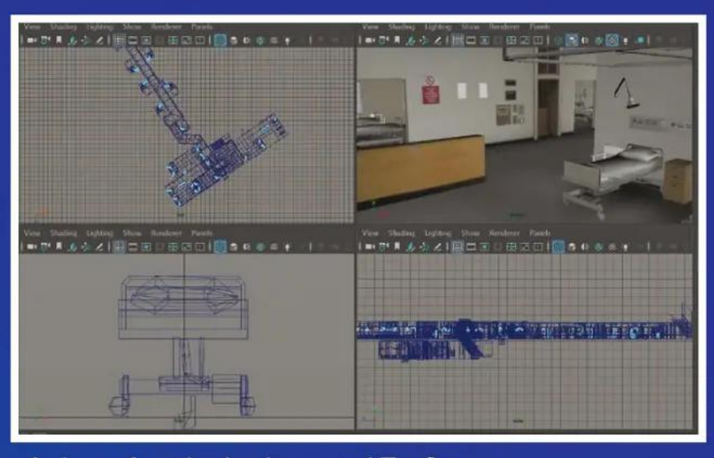
To realise their ambitions, teams had to tame the 'Emotion Engine', which contained the system's MIPS R-5900-based CPU, clocked at 294MHz. "I wrote most of the underlying game engine code, and there

» [PlayStation 2] The *Starsky & Hutch* development team underestimated the polygon-pushing power of the console.

» [PlayStation 2] *Final Fantasy X* showed that the console could handle plenty of detailed models simultaneously.

was a lot of trial and error, working out how to make the most of the machine," says Julian. "One thing I remember fondly is the 'precache' instruction on the CPU which unlocked an awful lot of optimisation potential. With modern CPUs the thing 'intelligently' reads what it thinks will be the next data used in to the local cache. This didn't exist on the Emotion Engine, but you could manually tell it to get some data ready for you, whilst working on the current batch. Similarly the CPU had 16KB of fast scratchpad memory, so writing code to deal with small chunks like that was necessary. I know that when we converted to PC, we just emulated that code, which was perfectly fast enough on PCs."

The PS2 was a polygon-pushing monster thanks to its Graphics Synthesizer chip, capable of enormous leaps in detail compared to PlayStation games. By the time of Sony's 2003 developer presentation, the platform holder claimed that "most recent games" were drawing over 50,000 polygons per frame, and that the fastest it had seen was pushing 125,000 polygons per frame at 60fps. However, getting the best from the console involved making effective use of the two vector unit co-processors in the Emotion Engine, which specialised in floating point operations crucial to 3D graphics and freed up the CPU for other tasks. These units, named VU0 and VU1, were also efficient in procedural generation. In 2002, Sony challenged programmers to produce demos using just the 16KB memory available to VU1, and the results ▶



» An image from the development of *The Getaway*, showing the hospital in 3D package Maya.

» [PlayStation 2] Here's the exterior of King's Cross station, as seen in the London of the real world.

» [PlayStation 2] Now here's the model of the station, created for use in *The Getaway*. Convincing, right?

» [PlayStation 2] Here's a look at Liberty City, via Noclip. This comparatively modest open world felt huge in 2001.

THE MIDDLEMEN

WHY ONE PIECE OF MIDDLEWARE DEFINED THE PS2 GENERATION

One name that will likely be familiar to any PlayStation 2 fan is RenderWare. You'll have seen the name in the start-up screens of plenty of popular games, but what is it and why was it so popular? RenderWare is a type of middleware – a game engine developed by Criterion Software, which was a subsidiary of Canon, best known for its photographic products. It had initially been introduced as a graphics engine in 1993 and was later used in Criterion's own Dreamcast games. It became exceptionally popular on the PS2 because creating a 3D engine for the PlayStation 2 was a difficult task, which proved to be a particular pain point for developers early in the life of the console.

Speaking to *Edge* in 2000, Criterion's David Lau-Kee summarised the value proposition for studios by saying, "There are lots of smart people out there, they'll get their heads around it. The question is, do you want them to be spending all their time getting their heads around it?" With the console's capabilities and complexity already driving team sizes, development times and budgets up, plenty of developers agreed. Hundreds of PS2 games used RenderWare, including Criterion's own *Burnout* series, the *Grand Theft Auto* trilogy and *Sonic Heroes*. In a 2002 interview with *Game Informer*, Neversoft's Scott Pease even credited the engine for allowing the team to ship *Tony Hawk's Pro Skater 3* on time.

By 2004 RenderWare had grown to offer physics and audio solutions too, and had become hugely important for not only PS2 development, but for its GameCube, Xbox and PC support that simplified multi-platform development. Criterion was purchased by Electronic Arts that year, and RenderWare was part of the deal. Though EA committed to continuing to license the engine, *Edge* noted that, "The problem for publishers is that these titles are now dependent on intellectual property owned by their biggest rival." In the end, it didn't matter much – RenderWare 4 never made it to market as EA felt that it underperformed on next-generation hardware, and developers instead moved to other engines such as Epic's Unreal Engine 3.

» [PlayStation 2] You may well recognise this logo, which appeared in early PS2 games like *Grand Theft Auto III*.

» [PlayStation 2] Criterion's own *Burnout Revenge* was a potent demonstration of what RenderWare could do.

» [PlayStation 2] *Mortal Kombat: Armageddon* is just one of the many popular games that uses RenderWare.

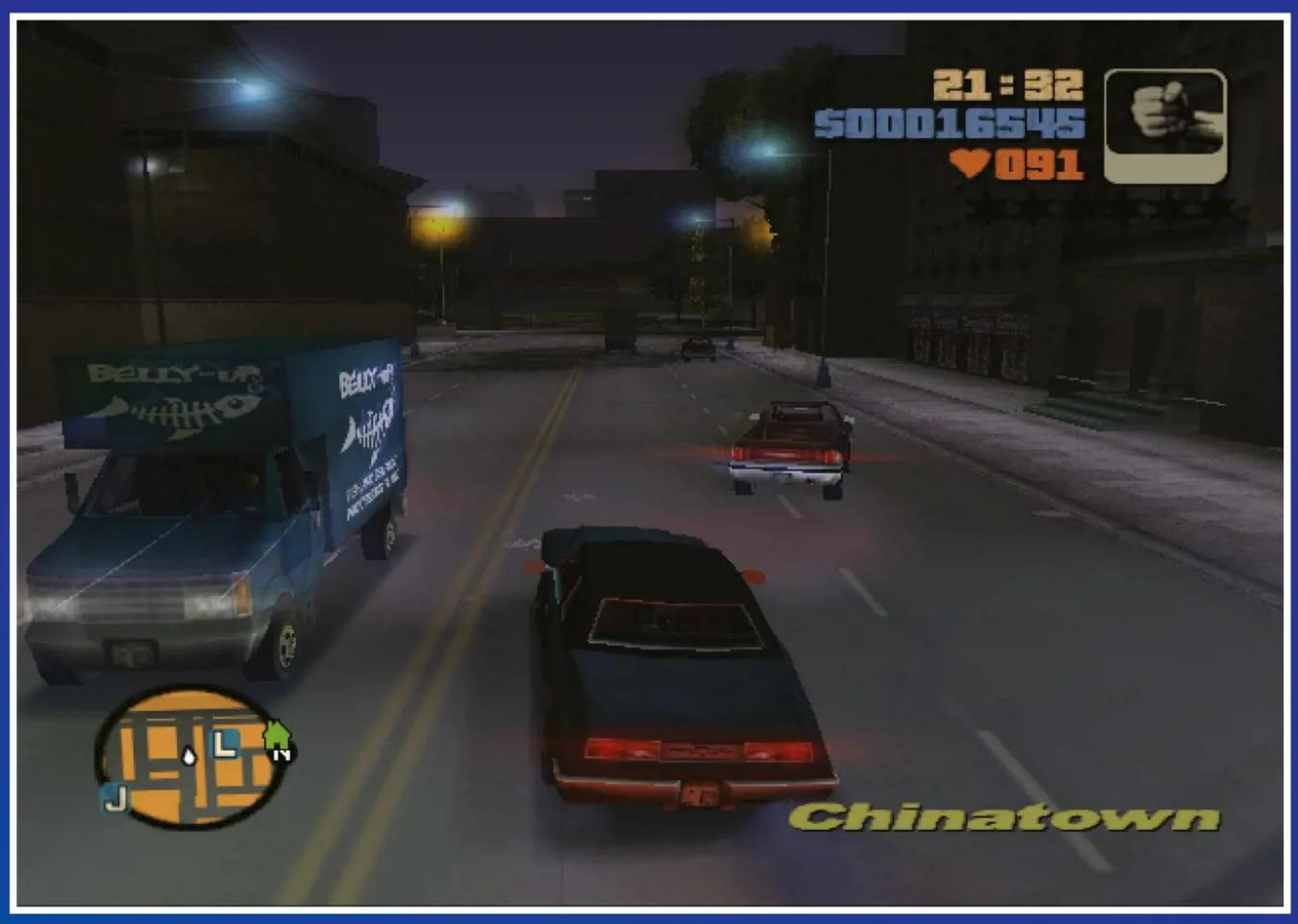
» [PlayStation 2] As the generation went on, in-engine cutscenes supplanted FMV sequences in games like *Kingdom Hearts II*.

included some amazing special effects including water simulations and a puppet model with ragdoll physics. Sony Computer Entertainment Europe stressed the importance of effective vector unit usage in a 2003 presentation to developers, noting that most games still weren't using VU0 and that the "best performing titles tend to use VU0 quite a bit".

The console's graphical power wasn't well understood early on, as Julian admits. "For *Starsky & Hutch* we had to come up with some polygon budgets early on for characters and buildings in the game. We seriously underestimated how much we could render, though. Better to be on the safe side, but it's why the characters in this game look a bit more PlayStation than PS2." And for as fast as the Graphics Synthesizer was when it came to drawing polygons and special effects, it did have limitations. A major one was the 4MB of video RAM on board – a relatively small amount that limited space for textures. "I remember that," says Dugan, "and also coders repeatedly telling us no long thin polygons! I think it was due to how they were clipped when going off-screen. It was better to subdivide your meshes, as the console could handle the extra polygons."

Another major limitation of the system was the way in which it handled anti-aliasing, as early games had a distinctly jagged look to polygon edges. An

» [PlayStation 2] Dugan worked as the kits lead on *2002 FIFA World Cup*, showing the specialisation of roles.



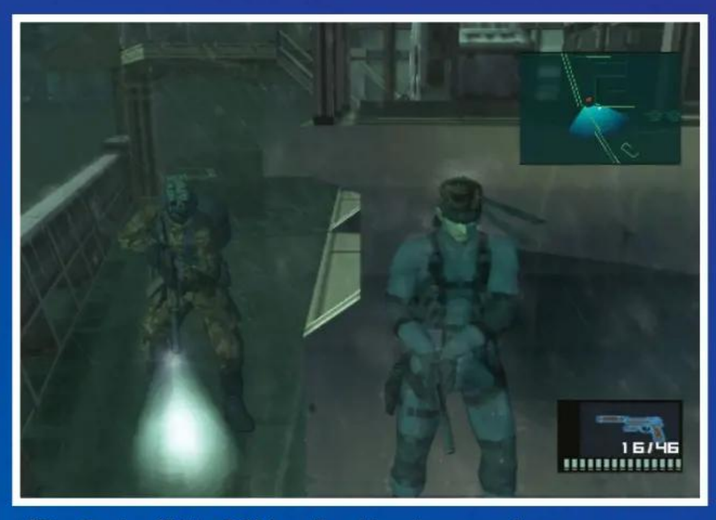
» [PlayStation 2] For many players, *Grand Theft Auto III* was the kind of experience that justified the console.

VISUAL MEMORY

DUGAN JACKSON EXPLAINS ONE OF THE CONSOLE'S QUIRKY FEATURES

If you spent a lot of time with the PS2, there's a good chance you have fond memories of its memory card screen – whereas most consoles used simple 2D icons to represent save files, the PS2 went a step further and actually offered 3D icons, which gave an extra sense of personality. The fun didn't stop there though, as the icons could be animated and even have an extra look for when a file was about to be deleted. "I'm not sure if any console had them as complex since the PS2," says Dugan, who created them for games including *Vietcong: Purple Haze*. "Personally I always appreciated other games which put in the effort to make interesting save icons on PS2."

Of course, to prevent these models from taking up enormous space on the memory card, there were rules involved in creating them. "We used an exporter plug-in for 3DSMax which was supplied by Sony. In the readme was a basic list of restrictions," says Dugan. "Animations can only have one, four, six or eight keyframes. The model can either be textured or untextured, but not a mixture, and the same goes for shading (either gouraud or flat-shaded). Polygon count limit was relative to the animation – one keyframe (no animation) would allow 600 polys, but 8 keyframes was limited to 400 polys. If you wanted it textured, a texture had to be 128x128."



» [PlayStation 2] The PS2 handles this rainy scene in *Metal Gear Solid 2* with ease, while the Xbox struggles.

anonymous developer explained to *Edge* that, "The PlayStation 2 does support hardware anti-aliasing. However, it is unlikely to be used in most games because every polygon in a scene needs to be distance sorted. Distance sorting was a necessity on the original PlayStation because there was no Z-buffer, but with the high poly counts handled by the PlayStation 2 it isn't feasible for most games." The developer further claimed, "There has been a lot of talk recently about certain developers having found a near-zero cost solution to the 'anti-aliasing bug', or of Sony having provided examples to developers. The technique that is being used is fundamentally different to anti-aliasing – it is a full-screen blur. Yes, it's fast, but the result is a blurry game with still clearly visible aliasing."

Not all of the graphical advances were down to sheer drawing grunt though – some were a simple matter of developer ambition. "I remember Brendan McNamara (or Chun) would come up with complicated designs or features they wanted and it was down to the programmers and artists to make it work," Jim explains. "One particular example would be the stairs. I remember many 'discussions' about that. Brendan was insistent on the game being like a movie and 'immersive', and therefore when going up or down stairs the characters feet *had* to connect and land on the steps. He was very adamant about this and it caused some friction at the time.

"This was a particular nightmare to code," Jim continues. "We were using inverse kinematics for leg and arm movement (aiming the weapons for example), so I remember designing a stair system where the stairs had to be marked out a specific way and each step had a set height – although I think we might also have had 'steep' stairs, and even spiral stairs – and then I'd have to calculate which step the foot was nearest to and match and move the foot position to it. This kind of thing wouldn't have been considered on the PlayStation, partly because no-one would have noticed due to screen resolution, but also processing of inverse kinematics to handle going up stairs would have been seen as a waste of CPU time. But with the PS2 and its increased power, things like this could be thought about and attempted, so despite the 'arguments' at the time, it was worth it in the end."

» [PlayStation 2] Here's Dugan's save icon for *Vietcong: Purple Haze*, a nice hovering helicopter.

» [PlayStation 2] Go to erase the file, and you'll be presented with a crashed, burning chopper instead.

INVENTING THE EYETOY

DR RICHARD MARKS EXPLAINS HOW THE POPULAR MOTION-CONTROL PERIPHERAL CAME TO BE

Though the Wii is often recognised for appealing to casual players and families thanks to its use of alternative input methods, the PS2 was no slouch in that regard thanks to peripherals like the EyeToy, a webcam that could track the motion of players. The device was conceived by Dr Richard Marks, a computer vision expert whose parents had owned a videogame store, during a trip to the Game Developers Conference. "When I saw the PS2 specs, I immediately thought that it might be good for computer vision, and I also thought it was unlikely anyone else would try to do that, so I dropped my resume at the Sony booth," he recalls. "When they reached out, I visited and told them all the things I would want to try, and they offered me a job!

"I decided early on that to do computer vision, fighting for the resources used by graphics folks (the vector units) might be a bad idea, because graphics are so important to games. So, I focussed on using different parts of the hardware: the core CPU and the IPU. I also had to learn how to write USB camera drivers, since PS2 didn't have support for that." In his previous job at Teleos Research, Richard had learned a great deal about optimising image processing code, which aided him in writing software for the PS2. "The PS2 also has some truly amazing SIMD instructions on the core CPU that are ideal for video processing," he explains. "Intel had some similar instructions for Pentium called MMX which I was familiar with, but the PS2 instructions were even more powerful, and almost no one was using them. I spent a lot of time writing fast video filters like blur, edge detection, background subtraction, etc, kind of like real-time Photoshop."

Despite the high power of the console for its time, there were plenty of limitations. "We were really focussed on 60fps for PS2, so I focussed on that as a target, which was really challenging given we only had USB1.1 which had an effective max of 8Mbits/sec," Richard tells us. "So I decided to sacrifice resolution for speed, and we mostly used 320x240 video even though the EyeToy hardware supported 640x480." That hardware was supplied by Omnivision, as Sony's own cameras were too high resolution and expensive to bundle with the software. "The PS2 hardware included the IPU to decode MPEG-2 for the purpose of DVD movie playback. Unfortunately, MPEG-2 decoding is complex and uses a lot of resources and has significant latency, and more importantly at the time there weren't any reasonably priced cameras that could output MPEG-2," says Richard. "But Omnivision's camera chip could output JPEG frames, and MPEG-2 includes something called I-frames which are very similar to JPEG. So Omnivision tweaked their chip firmware to output MPEG I-frames, and voila! Nearly free video stream decompression at 60fps!"

The team experimented with object tracking early on. A demonstration set in a medieaval chamber was created, controlled with coloured balls on wands. The demo, "Also included cool new graphics tech from Gabor Nagy and new simulation tech from Eric Larsen," Richard remembers. Unfortunately, a live on-stage demonstration during Sony's keynote presentation at GDC 2000 didn't work. "I had hard-coded the colour-tracking thresholds, and the lighting was different during the keynote versus rehearsal." A later prototype involving the camera tracking a wand for spellcasting in a traditional 3D game also failed to excite players. "When we playtested… my son hated it, and many people found it frustrating," Richard admits. "London Studio went back to the drawing board, and focussed on what they liked about the previous prototype experiences, and they brilliantly created *EyeToy Play*."

» Doesn't this ball on a wand look like a low-tech PlayStation Move controller?

» [PlayStation 2] Another example of object tracking, with the PS2 placing characters on different coloured balls.

» [PlayStation 2] You can see procedural terrain generation in action on the ground in the *3D Ages* version of *Space Harrier*.

One of the most famous features of the PS2 was its support for DVDs, and this wasn't just a selling point for people who wanted a cheap movie player. The 4.7GB capacity of a single-layer disc was a huge improvement over the 650MB available on a CD-ROM, and particularly massive games such as the *God Of War* titles utilised 8.5GB dual-layer discs. The result was that relatively few multi-disc games were released, although *Grandia III*, *Onimusha: Dawn Of Dreams* and the second and third episodes of the *Xenosaga* series all came on two discs. Though the increased capacity was welcome, game designs were becoming more demanding on the disc drive – particularly with the rise of open-world game designs. "One of the hardest things we did was streaming the open world from DVD," says Julian, which he considers was "very difficult to get right".

Chun and Jim both cite this as the biggest technical challenge encountered in *The Getaway*, too. "You could drive around pretty much the entire city of London and obviously we couldn't have any pauses for loading as often you were being chased or chasing someone, and this would break the realism," Jim explains. "While the game ran perfectly on our devkits, we would receive bug reports that were specific to the oldest retail model of the PS2," Chun adds. "Character models disappearing from cutscenes, and big voids appearing in the environment with chunks of roads missing as the player drove at high speeds."

Drastic measures were considered to solve the problem. "As a possible remedy, we discussed allocating space for an ultra-low-detail version of everything to remain in the PS2's memory at all times. If the hardware couldn't load the high-res 3D models quickly enough, this would serve as a fallback," Chun continues. "However, sacrificing this memory would negatively impact the overall visual quality of the game. Would we fail QA if this bug cropped up once in a blue moon during submission? Working to the lowest denominator certainly had its challenges. But no, we tweaked a few things in the end and went for broke on the best visuals possible."

» [PlayStation 2] 2D games like *Guilty Gear XX* benefitted from the PS2's support for high resolutions.

Jim elaborates on how the problem was solved. "The disc access on the PS2 was fairly slow, especially the seek times, so my understanding (I didn't work on this part) is the map was broken up into grids of 250m x250m and grids in front of the camera were streamed in, while areas behind were kept in memory for a while until they were too far away. The car could do a U-turn, or the player if he was running around could just turn 180-degrees, so we couldn't delete them straight away," he explains. "The key solution for this was that the map data was stored sequentially on the disc, so that there was minimal need to seek on the disc as the adjacent areas in the map would be next, or very close on the physical disc. This vastly reduced any seeking time, so the map could be loaded in without hitching."

The struggles of PlayStation 2 development were ultimately worth it. The first year of releases might have been rough, but it wasn't long after the console's first anniversary that games which lived up to its potential began to arrive – games like *Gran Turismo 3*, *Final Fantasy X* and *Devil May Cry*. With them came the influx of players, and the incentive to persist with the tricky console. The GameCube and Xbox may have offered more raw grunt when they arrived in late-2001, and the Xbox was certainly friendlier to developers hoping to port their PC engines, but developers that worked to the strengths of the PS2 reaped the rewards. Compare the likes of *Metal Gear Solid 2: Substance* or *Silent Hill 2* to their Xbox ports, and you'll see that illustrated clearly – and of course, PS2 exclusives like *God Of War II* look as good as anything else released in that generation.

Julian sums it up best, saying, "The PS2 was by far the most powerful hardware any of us had worked on, most of us being around from 8-bit days, so it never felt weak at all. In fact it was incredible really!" It really was a huge technological leap of a kind we're unlikely to ever see again, and thanks to the hard work of the developers who created games for it, it remains the home to a library that offers both enormous breadth and plenty of quality. So here's to the PlayStation 2 – a tricky beast that was well worth taming. ✱

» [PlayStation 2] The hardware used to play DVD movies allows the PS2 to display background video with minimal performance impact.

» [PlayStation 2] Optimisation was important on the PS2, lest you get *Global Defence Force*'s low framerates.

» [PlayStation 2] *Xenosaga: Episode III* comes on two DVDs – though that's mostly because of its cutscenes.

» [PlayStation 2] *God Of War II* employs an on-rails camera system, helping it to pack in details.

World of Warcraft: An Enduring Legacy

Whether or not you have any idea what Leeroy Jenkins, Bubble Hearthing and Thunderfury, Blessed Blade Of The Windseeker actually mean, you have surely heard a fair bit about WOW over the years. To celebrate its massive anniversary milestone this month, we look back at 21 years of World Of Warcrack... sorry, Warcraft

WORDS BY ADAM BARNES

If you recall issue 263 of this fine magazine, you would have seen us celebrating the 25th anniversary of *EverQuest*, bringing about the MMO revolution and standardising a lot of what would go on to be replicated in countless other entries into the genre ever since. But for as impressive as it was – as genre-forming, industry-bending as it was – you simply can't talk about MMOs without that globally recognised acronym: *WOW*.

World Of Warcraft is also celebrating a significant birthday this November, and with two decades under its belt it won't be long until it's legally able to drink in an American bar. There's some irony to these milestone birthdays, however, since if not for the impact that *EverQuest* had on the team at Blizzard, WOW might never have been made at all. For Kevin Beardslee, one of the original team members on *World Of Warcraft*, the release of *EverQuest* was a turning point for the studio, who were at the time trying to get a completely different project off the ground. "I remember Shane Dabiri [*WOW* producer] telling me, 'You gotta try this *EverQuest* beta out,'" says Kevin, "and so we hopped in on it and we were like, 'Oh wow, this is really cool.' We created two Blizzard guilds, Interloop and Frostwolves." But for as all-consuming as *EverQuest* was, it got Kevin thinking that there were improvements that could be made with a little bit of Blizzard magic. It was Kevin who would go on to pitch an MMO project to the management at the studio. "Why don't we, Blizzard, do something like *EverQuest*? Because the *EverQuest* controls were clunky, the art was meh, we've got such better universes."

> "WE KNEW WE HAD AN AUDIENCE THAT LOVES WARCRAFT, SO LET'S BRING THEM IN MUCH CLOSER AND LET THEM EXPERIENCE THE WORLD"
> KEVIN BEARDSLEE

Within a week, the struggling Project Nomad was cancelled and preproduction on a Blizzard MMO began, though Kevin's pitch suggested either *StarCraft* or *Warcraft* as the potential settings for the game. It was put to a vote, and ultimately the fantasy RTS was selected as the one to go with. "We knew we had an audience that loves *Warcraft*," recalls Kevin of that initial concept, "so let's bring them in much closer and let them experience the world. Even *World Of Warcraft* was the working title of the game." While *EverQuest* would be foundational in what Blizzard wanted to achieve, and even defined a lot of the design decisions that would be made, there was a long list of improvements that the team wanted to implement with their own MMO. "I had been playing *Quake 3D*," says Kevin, who had been put in command of the game's movement and input, "the controls felt so good: ASD-movement, the legs and the way they rotated, your head would turn and jumping... just everything!" This inspired Kevin to ensure that *WOW* had a similar "joy of movement" because in comparison, "*EverQuest* just felt terrible."

In fact, everyone at the studio had their own opinions on what needed to be done to 'fix' *EverQuest* and to make an MMO with Blizzard's already notorious quality. "Personally, I had a concern with the lack of quests [in *EverQuest*]," says Bo Bell, one of the game designers that had been brought up from QA to help build out the world and zones of *WOW*, "especially for a game that was named *EverQuest*. There was very little guidance on what to do in the game or how to do it and a general lack of content." Originally Blizzard had intended to match *EQ*'s lack of direction for questing, but an overzealous designer "went nuts" on quests for Elwynn Forest, which was the first zone that Blizzard perfected as a boilerplate for all other zones afterwards. "The reaction was

» [PC] Progressing from sub-10 points of damage up to the thousands is a constantly rewarding experience.

» [PC] "Alliance or Horde?" To this day this question remains a pertinent one for all *WOW* players.

that we all wanted more quests, and the team leadership agreed as well and made it a focus of our content creation."

Everything from mana regen and what happens when the player dies, the time it takes to kill something and the player's jump height with everything in between were refactored as Blizzard refined what an MMO should be. Inspiration didn't just come from ways to improve on *EverQuest*, but from across the industry. "I think I was playing *Metal Gear Solid* at the time and whenever that 'bbbrrnnk!' exclamation point alert would go above their head I knew: A) I'm terrified and B) I clearly know that the guy hates me," says Kevin of how *WOW* got its iconic NPC exclamation mark. "I was like, what if we put that above the quest giver's head? You will know that you should probably talk to that guy, but in *EverQuest* you don't even know the magic phrase to say to someone for a quest." Kevin jokingly relents that in hindsight "it probably should have been a question mark" but this was the sort of seemingly minuscule detail that got iterated on.

Over the course of its near five-year development, *WOW* would scale up to involve the majority of the studio – who were also working on *Warcraft III* at the time. But this ▶

» [PC] Professions played a big part of the *WOW* experience, but those with a high Cooking skill were surprisingly popular in raids.

KEVIN BEARDSLEE

Kevin pitched the concept of *WOW* and touched the game's design, art style and overall balance. Nowadays he's the studio head of Paydirt Games.

BO BELL

Bo was brought over from QA to help build *WOW*'s quests and zones. He is now the principal combat designer at Fortis Games.

was just a project that was easy to get everyone on board, and that eagerness shone through to the final product. "This can't be understated enough: when a development team really, really loves the work they are doing and have bought into the vision of the game, then amazing things can happen," explains Bo. "The passion and love that went into making the original game really shined through and was difficult to replicate."

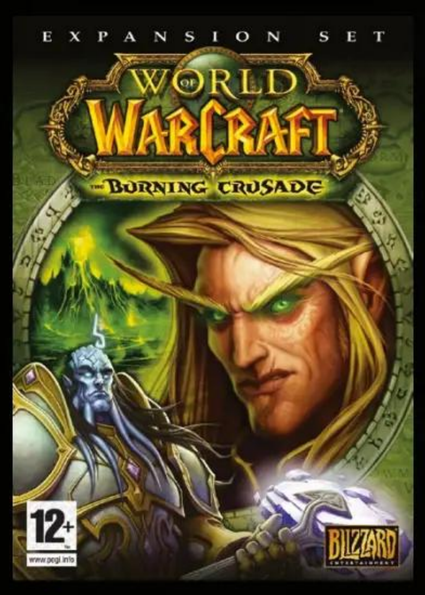
There weren't really any doubts surrounding *World Of Warcraft*'s potential success, and *EverQuest*'s continually increasing player subscribers offering tantalising promise for *WOW*. Bo recalls the moment that told him that the MMO was going to be a winner, not long after mounts had been added into the alpha. "There were some breadcrumb quests that took you into Westfall around level 9 with a few introductory Westfall quests. However, the big breadcrumb quest that took you just over the bridge from Elwynn to Westfall gave you a mount as a reward. I vividly remember playing with the other level designers, finishing up those last few quests when someone came riding up the road on a horse." This was, as Bo puts it, a "magical" moment. "I needed that horse," he says. "Shortly thereafter, the four of us made it over the bridge and received our mounts. We rode around for a good 15 minutes just having fun. That's when we all knew we were making something special." For Kevin, the turning point for him was when he found he was choosing to play *WOW* while it was still in development instead of *EverQuest*. "We would just hop in and do the weekly raid or whatever in *EverQuest*," he recalls, "but then we'd just come back and play *WOW* all night in alpha."

"We even talked about how much money it could generate a month," says Bo. "At the time *EverQuest* was pulling in something like $500,000 per month. We said things like we could see *WOW* easily hitting that, maybe even $800K. Or how about $1,000,000?! We had a good laugh about that one, but we all kind of thought maybe it could do that for real." But even these 'wild' estimations would pale in comparison to the real successes of *World Of Warcraft*. Within months of its November 2004 release, the MMO had already reached 1.5 million subscribers. Multiply that by the $15 subscription fee, let alone the cost of the game alone, and you'll understand what *WOW* has achieved for Blizzard since its release. After only a year, the total shot up to 6 million subscribers and beyond.

That's not to say it was the perfect game, certainly it had flaws that would go on to be addressed in any of the countless updates or expansion packs, but its accessible gameplay, captivating world and story, and its iconic potato-PC compatible visuals continued to draw in the crowds. The question was, what was next? "Part of us was super excited," says Kevin, "we got raids out and there was stuff that was in progress that we had to go live with." The problem was that the studio had endured a two-year crunch to hit the release date, and the prospect of doing it again was naturally not a thrilling proposal. "We did take a breath, we slowed down, we

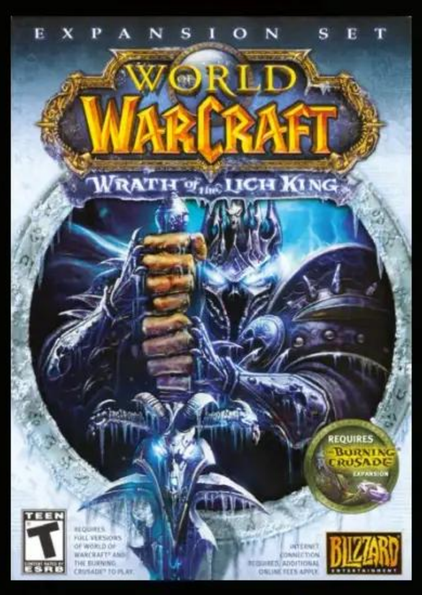
"WE WOULD JUST HOP IN AND DO THE WEEKLY RAID OR WHATEVER IN EVERQUEST, BUT THEN WE'D JUST COME BACK AND PLAY WOW ALL NIGHT IN ALPHA"
KEVIN BEARDSLEE

EXPANDING AZEROTH



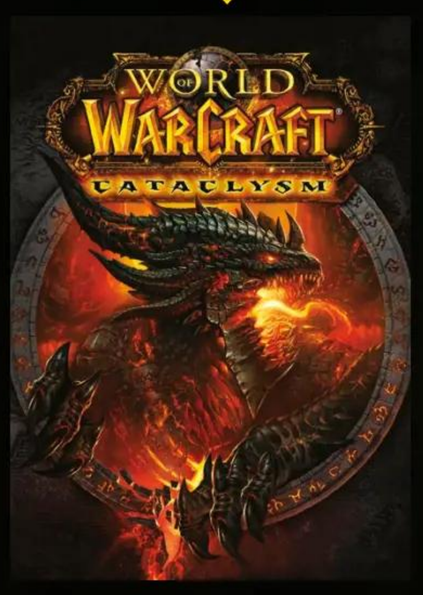
THE BURNING CRUSADE
2007

There were many options for what would be the setting for the first expansion, but in the end Blizzard decided to send players through that overbearing portal at the bottom of the Eastern Kingdoms back to the homeworld of the orcs.



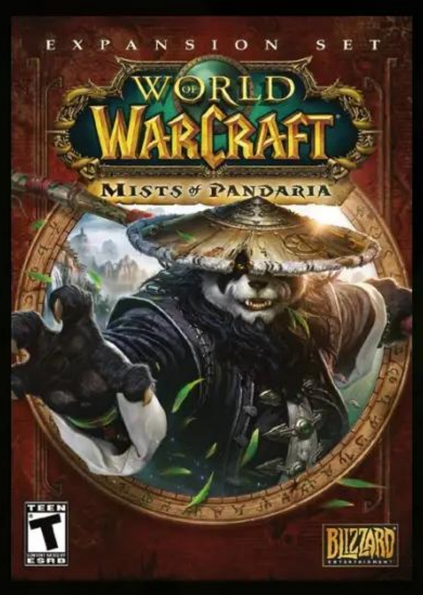
WRATH OF THE LICH KING
2008

Facing one of Blizzard's most iconic characters from *Warcraft III* was a smart choice, but the quality of the expansion, its end-game raid content and all the improvements it brought to the game have it placed as one of the best Blizzard ever made.



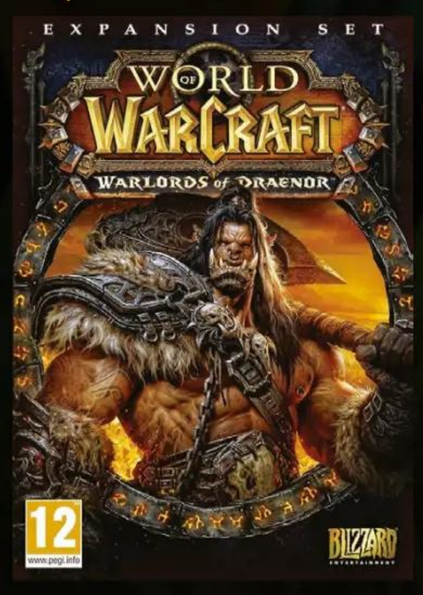
CATACLYSM
2010

Even a couple of years after release, *WOW* was starting to look dated. This expansion pack brought with it a world-sundering destruction at the hands of Deathwing. It meant a rebuilt Azeroth, enhanced visuals and a faster levelling experience but was the start of *WOW*'s 'simplification'.



MISTS OF PANDARIA
2012

Perhaps one of the most divisive expansion packs, the introduction of the playable Pandaren race and Asian-inspired aesthetic pushed a lot of players away. If you ask this writer, however, in terms of an overall package, this was one of Blizzard's best.



WARLORDS OF DRAENOR
2014

Perhaps in an attempt to win back some of the players lost to the 'Kung Fu Pandaria' expansion, *Warlords Of Draenor* was dripping with nostalgia and classic *Warcraft* lore. It missed the mark in a lot of ways, though, with a mishmashed story and sub-par attempt at player 'housing'.

» [PC] Each inn in a new location was a bastion for quests, other players and a place to /dance emote on the tables.

stopped crunching. We had a few months. But by February we were ramping up again and it was like, 'We gotta get this expansion out by Christmas.' We were like, 'What? We don't even know what it is yet!'"

As with any MMO, it was essential that enough work was done on the game to keep the playerbase engaged, whether that was balance patches and content updates or the next expansion pack. "We started thinking about where we should go next, and I remember we were thinking of doing pandas if China really was this big of a market. Somebody had even made a panda character. We were looking at Nazjatar, that was talked about as a potential first expansion and what it would be like to be in an underwater zone. I remember we were considering going into the Emerald Dream. Obviously we had this giant portal in Badlands, and clearly players want to know what that is for." Ultimately it was decided that Outland, through that portal, would be the next destination for players when *The Burning Crusade* released – not by Christmas but in fact January 2007. By this point *World Of Warcraft* was already hitting phenomenal levels of popularity, reaching into pop culture and drawing in players from around the world. *The Burning Crusade* sold 2.4 million copies on release day alone, and was very well received by an audience that was eager for a little more from vanilla *WOW*.

At this point *World Of Warcraft* had already cemented itself as the MMO to beat, and countless other games looking to take on the burgeoning genre fell to the wayside. *EverQuest*, which had been the springboard from which *WOW* could leap, had its active subscribers peak in 2004 at 'just' 550,000. While this number was cannibalised somewhat with the release of *EverQuest II* ▶

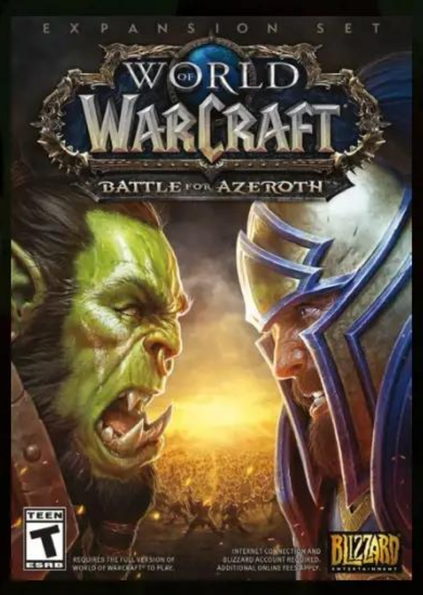
» [PC] It is customary to shout 'Ding!' with each new level. Expect numerous 'gz' (congrats) in response.

A TIMELINE OF EVERY WOW EXPANSION PACK

LEGION

2016

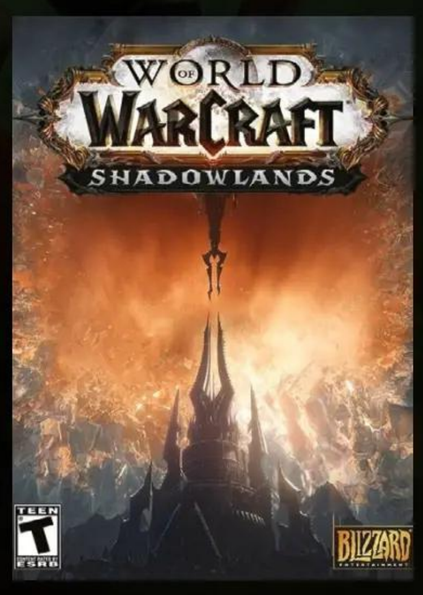
■ Easily 'modern' *WOW*'s best expansion, *Legion* was heavy on the *Warcraft* lore and nostalgia putting the Burning Crusade at the forefront. But it added in heaps of changes to the gameplay too, from Artifact Weapons to the player Demon Hunter class.



BATTLE FOR AZEROTH

2018

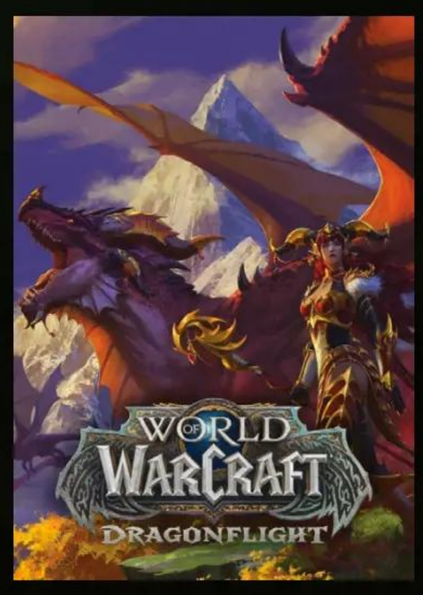
■ Coming off *Legion*, the *WOW* playerbase were optimistic for the future of the game. *Battle For Azeroth*, however, is considered to be the worst expansion. It lacked any real storyline and the new zones just struggled to inspire the way *WOW* usually does.



SHADOWLANDS

2020

■ Blizzard needed to do something grand to recover after *Battle For Azeroth*, but *Shadowlands* was just not enough. Its story lacked the usual consistency, the Land Of The Dead zones weren't thrilling and questionable design choices would place it at the bottom of any tier list.



DRAGONFLIGHT

2022

■ Things were turned around by *Dragonflight*, with many players calling this expansion a return to form. It introduced a new race and player class, a fun flying mechanism in dragon riding and some of *WOW*'s most gorgeous zones in the Dragon Isles and the Emerald Dream.

THE WAR WITHIN

2024

■ The latest expansion has the playerbase excited about the future of *WOW*. It's the start of Blizzard's own attempt at an MCU-like plan, part of the Worldsoul Saga trilogy that will spread its narrative across three interconnected expansions. It's been very well received.

» [PC] That quiet 'ping' could be heard every time you passed an Enchanter hard at work.

» [PC] Some dungeons were more popular than others, in many cases this tied directly to how easy they were to get to.

» [PC] Where the Alliance players will remember lush forests, Horde players will have a fondness for savannas and deserts.

just two weeks before *WOW* originally launched, by the time the third expansion pack *Wrath Of The Lich King* released in 2008, *EverQuest* and *EverQuest II* had a combined subscriber tally of 200,000 while *WOW* was sitting pretty at 11.5 million. This was the impact of *WOW*'s success, and it wasn't only *EverQuest* that saw this downwards trend. *Star Wars Galaxies, Dark Age Of Camelot, Ultima Online* as well as post-*WOW* MMOs like *Warhammer Online* and *Rift* all struggled to compete with the behemoth sucking up all the players.

Then came *Cataclysm* in 2010, which reworked the whole of the two continents on Azeroth in the wake of the destruction caused by the appearance of a once slumbering dragon with the quaint name of Deathwing. Starting at this point with the historical peak of 12 million, *World Of Warcraft* has since seen a steady decline in its subscriber numbers. Many will point to *Cataclysm* as the beginning of *WOW*'s oversimplification, where dungeons and raiding was reduced to by-the-numbers gameplay and the LookingForGroup system removed a massive part of the social aspect of the game and working together to complete these otherwise challenging tasks. And while it is true that the *World Of Warcraft* of 2024 is a considerably more lenient experience than its yesteryear equivalent, there's an argument to be made that those players who once upon a time could devote their time to endless wipes in Blackrock Depths or had the energy to play sleeplessly for days on end to hit the new level cap with each new expansion likely aren't able to do so 20-odd years later.

> "SOME OF THEM WERE SIMPLY AMAZING JOURNEYS AND I AM SO HAPPY I WAS ABLE TO GO ALONG FOR THOSE RIDES"
> BO BELL

Time comes for us all, we grow up, build a career, get married, start a family; if *WOW* had still expected the same dedication that it did back in 2004 then in all likelihood the game would've already closed its last server as its playerbase aged and with that have less free time to spare for a second life in Azeroth. "The success of the original allowed Blizzard to make more and more and more," says Bo of *WOW*'s long-term appeal. "Bigger, better and more refined with each update. Sure, there were some expansions that didn't do all that well, but then again some of them were simply amazing journeys and I am so happy I was able to go along for those rides."

And for many players, albeit perhaps not the most hardcore raiding guilds and player-versus-player pros, there's a comfort to *WOW* that few other games past or present have been able to provide. The numbers speak for themselves, too, because while Blizzard hasn't officially announced subscriber totals since it dropped to 5.5 million after the release of *Warlords Of Draenor* in 2015, savvy sleuths on the

WOW GOES POP

HOW WORLD OF WARCRAFT BROKE OUT OF THE GAMES INDUSTRY AND INTO POPULAR CULTURE

MAKE LOVE, NOT WARCRAFT

■ Arguably the most iconic moment of *WOW*'s history was when *South Park* made an entire episode about it, even featuring in-game recreations of Stan, Cartman, Kenny and the others. Working alongside Blizzard, this was as much a love note to *WOW* as it was a tongue-in-cheek jibe at the nerds who play it.

ME NOT THAT KIND OF ORC!

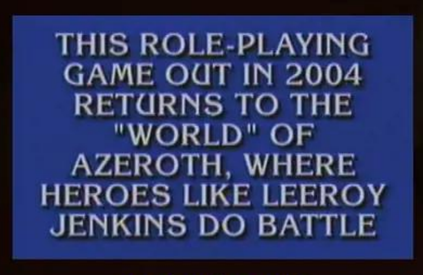
■ *WOW* tends to draw attention when the public learns that a celebrity is also a Warcrack addict. Jamie Lee Curtis is noteworthy in this regard, considering she appeared in orc cosplay at the premiere of the *Warcraft* movie. She even officiated her daughter's wedding dressed as famed Alliance mage Jaina Proudmoore.

MR CONDESCENDING DIRECTOR

■ Many gamers will remember the *WOW* commercials featuring a number of well-known celebrities, from Ozzy Osbourne to William Shatner. Mr T's is perhaps the most popular, which featured the recognisable character/actor claiming, "Maybe Mr T is pretty handy with computers?"

FROM AZEROTH TO TABLETOP

■ As with any supremely popular IP, *WOW* has been turned into a number of bespoke board games, comic books and even a version of *Trivial Pursuit*. But gamers of a certain age will most likely remember walking up to the cash register of any gaming or gamer-adjacent store and seeing the *WOW* trading card game packs.



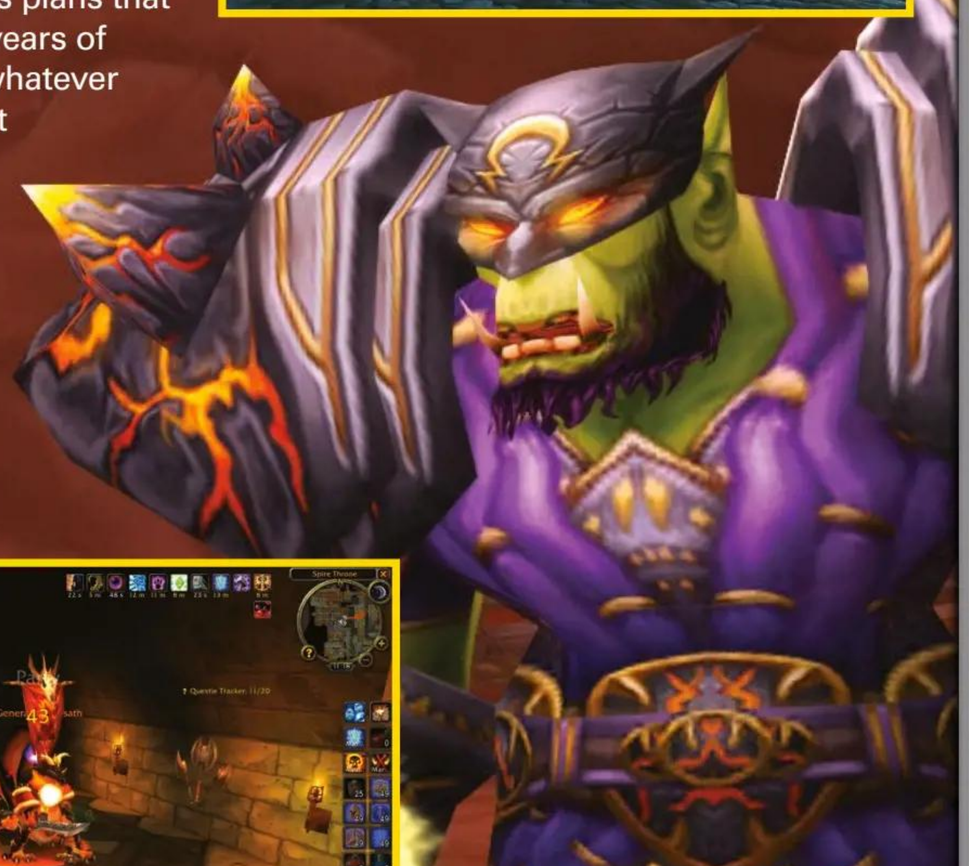
JEOPARDY QUESTION

■ It's long been a barometer for cultural ubiquity when you're an answer on *Jeopardy*, but when *WOW* was an answer on the game show in 2005 it didn't just use Azeroth as its clue but it also name dropped the infamous Leeroy Jenkins which, at this point, had already cemented itself as one of *WOW*'s most notorious moments.

internet estimate that the number of active subscribers is constantly flitting between 4 and 7 million, peaking with the release of *World Of Warcraft Classic* in 2019 with a guesstimate of 8.2 million.

And let's not forget, *WOW*'s history is far from over. "They got Chris Metzen back!" says Kevin when considering *WOW*'s future. "He understands the narrative and the pacing and all that," he adds, and certainly Metzen's guiding hand on the narrative and lore of all of Blizzard's games has been a critical part of the studio's success over the years. Since returning to Blizzard in 2023, Metzen spearheaded the *Worldsoul Saga*, a trio of expansion packs that began with *The War Within* and will share an interconnected story once described by Metzen himself as "too epic to be contained in a single expansion". Does this mean there's plans that will see us through to another 21 years of *World Of Warcraft*? Perhaps. But whatever comes to pass, what is clear is that whether you're a regular raider, a rare mount hunter or simply like to hang out in Stormwind spamming the general chat trying to make friends, Azeroth is going to be your home for a good while yet. ✱

» [PC] That iconic quest icon has since been reworked in modern *WOW*, but it is iconic enough to live on in the hearts of gamers everywhere.



» [PC] Blackwing Lair was the first raid to be added to the game, a 40-man raid against dragons, Fire Elementals and the Firelord Ragnaros.

» [PC] Nowadays players use their higher-level characters to breeze through old school raids for an easy chance at those iconic armour sets.

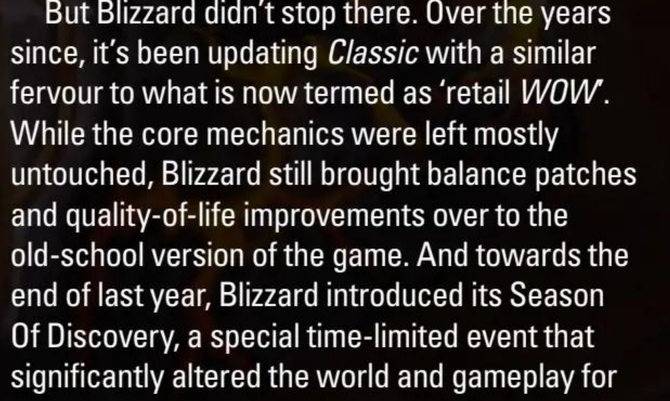
AZEROTH REVISED

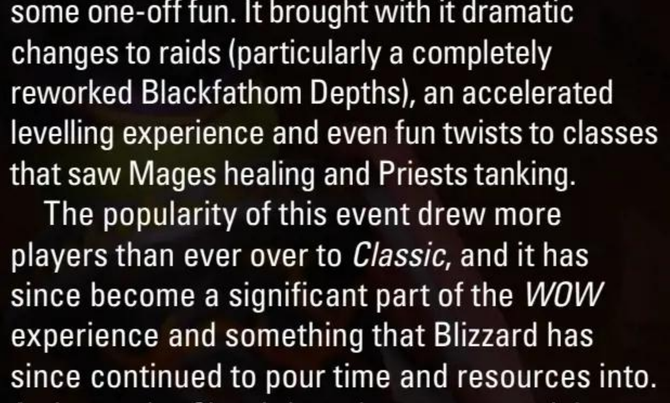
HOW THE PAST IS WOW'S NEW FUTURE

■ After years of demand, Blizzard released *World Of Warcraft Classic* five years ago, giving nostalgic players a chance to play out their lives in Azeroth as if nothing had ever changed. It proved to be a smart decision though, since it was instantly popular even to a point of drawing some long since lapsed players back into the fold.

But Blizzard didn't stop there. Over the years since, it's been updating *Classic* with a similar fervour to what is now termed as 'retail *WOW*'. While the core mechanics were left mostly untouched, Blizzard still brought balance patches and quality-of-life improvements over to the old-school version of the game. And towards the end of last year, Blizzard introduced its Season Of Discovery, a special time-limited event that significantly altered the world and gameplay for some one-off fun. It brought with it dramatic changes to raids (particularly a completely reworked Blackfathom Depths), an accelerated levelling experience and even fun twists to classes that saw Mages healing and Priests tanking.

The popularity of this event drew more players than ever over to *Classic*, and it has since become a significant part of the *WOW* experience and something that Blizzard has since continued to pour time and resources into. As it stands, *Classic* is no longer a nostalgic novelty, but one half of *WOW*'s future.





ULTIMATE GUIDE

STALKER

SHADOW OF CHERNOBYL

CAN YOU OVERCOME THE RADIATION, PHYSICS-DEFYING ANOMALIES, TERRIFYING MUTANTS, PSYCHOTIC FACTIONS AND MIND-MELTING MYSTERIES FOUND IN STALKER'S CHORNOBYL EXCLUSION ZONE? REMARKABLY, ONE OF THE BLEAKEST, MOST HARDCORE SURVIVAL-FPS GAMES EVER STILL HAS A VIBRANT AUDIENCE NEARLY 20 YEARS AFTER ITS LAUNCH

WORDS BY STEVE BOXER

Some games are just, well, games – but not *STALKER*. Ukrainian developer GSC Game World's 2007 survival-FPS is nowadays perceived as nothing less than a cultural artefact, of immense national significance (which continues to grow in light of Ukraine's ongoing tribulations). Amazingly, it's still widely played nearly two decades after launch, and its legendary status was extended to new audiences in 2024 with the arrival of *STALKER 2* and the remastered *STALKER: Legends Of The Zone Trilogy*.

But it was far from obvious that *STALKER: Shadow Of Chernobyl* (to give it its full title) would assume any sort of significance beyond the scope of the average game when it launched in 2007. Sure, it was met with acclaim – hailed as a top-notch, hardcore survival-shooter, with a pleasing undercurrent of horror, a (rare at the time) open-world feel, although it wasn't strictly an open-world game, and – perhaps most importantly – bags of distinctively Ukrainian personality.

What it wasn't, even then, was one of the most polished or visually cutting-edge of first-person shooters; it was far from bug-free, some of the AI controlling its enemies and processes could be erratic and while it looked OK, it didn't look great.

But what it did have was a hard-bitten, bleak and at times terrifying ambience that left you with a real sense of achievement for surviving the events it depicted in its wondrously distinctive game world. And what a game world: the Exclusion Zone around the Chornobyl reactor, a source of immense fascination since its meltdown in 1986. In *STALKER*'s bizarro-world, that area, known in the game as the Zone, had acquired all manner of weird and dangerous physics-defying anomalies, and become populated by both mutants (of human and animal origin) and numerous factions of chancers and ne'er-do-wells, and become a magnet for shady and opaque military research.

A delicious premise if you fancied yourself as a sort of hairy-chested hardcore gamer: *STALKER* was very much a PC game (although it has now branched out, in all its iterations, onto consoles) and it really threw you in at the deep end. Initially, it polarised gamers somewhat – as it forced you to start with almost nothing, having to scavenge assiduously for ammo and decent weaponry, many found that they just couldn't get into it. But for those who persevered, the rewards were plentiful.

Despite its refusal to compromise, *STALKER* was a huge success. It found particularly huge audiences in Ukraine, Russia and the surrounding ex-Eastern Bloc countries, who found a game they could really relate to. Such was the enthusiasm of those audiences – and the canniness of GSC Game World – that a modding community soon emerged centred on *STALKER*, taking the base game in all manner of new directions. The *Lost Alpha* mod, for example, exhumed a load of stuff which GSC Game World had left out of the original game – and was itself reworked as *Lost Alpha Revisited*. Another popular mod, *Anomaly*, let you make up your own story in *STALKER* while providing loads of new quests.

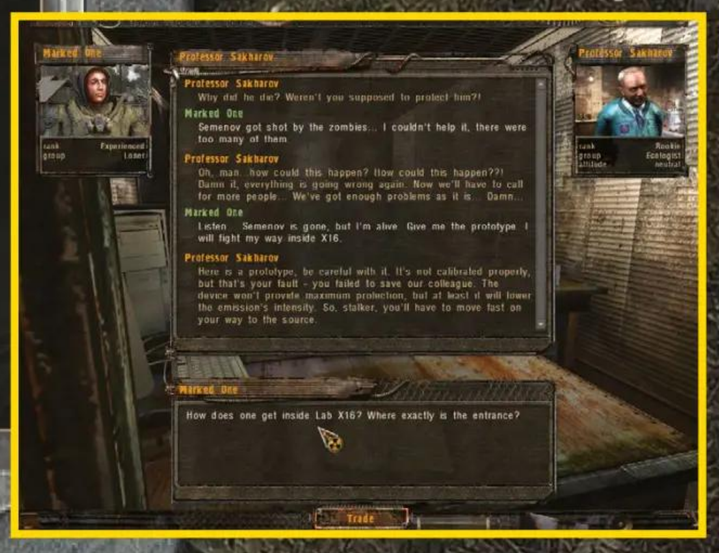
Before that modding scene burst into life, and while *STALKER* was still at the forefront of gamers' collective consciousness, GSC Game World assiduously released two add-ons: *Clear Sky* in 2008 and *Call Of Pripyat* in 2009. *Clear Sky* copped some flak for reusing environments from the original game, but introduced a faction-dominance system which was fun, and gave a glimpse of the Zone in a more chaotic state before *STALKER: Shadow Of Chernobyl*'s events.

Call Of Pripyat, with its concentration on the mythical centre of the Zone and some notable technical and interface advancements (plus a much-needed

» [PC] In case you're wondering, *STALKER* stands for Scavengers, Trespassers, Adventurers, Loners, Killers, Explorers and Robbers.

» [PC] Campfires abound in *STALKER*, providing welcome camaraderie and respite from the general mayhem.

» [PC] Finding and equipping a scope for your favourite weapon can give you the jump on enemies before they see you.


Professor Sakharov
Why did he die? Weren't you supposed to protect him?!
Marked One
Semenov got shot by the zombies... I couldn't help it, there were too many of them
Professor Sakharov
Oh, man. How could this happen? How could this happen??! Damn it, everything is going wrong again. Now we'll have to call for more people... We've got enough problems as it is... Damn...
Marked One
Listen... Semenov is gone, but I'm alive. Give me the prototype. I will fight my way inside X16.
Professor Sakharov
Here is a prototype, be careful with it. It's not calibrated properly, but that's your fault - you failed to save our colleague. The device won't provide maximum protection, but at least it will lower the emission's intensity. So, stalker, you'll have to move fast on your way to the source.
Marked One
How does one get inside Lab X16? Where exactly is the entrance?
Trade

» [PC] *STALKER*'s game world is extremely atmospheric, thanks to a gripping storyline and the many interesting characters you interact with.

weapon and armour repair and upgrade system), was very well received, and continued to advance *STALKER*'s march towards legendary status. And then the *STALKER* modding scene began to explode, essentially taking the base premise and vibe of *STALKER*, and expanding it into a dizzying number of games that offered startlingly diverse forms of gameplay.

That kept the *STALKER* flame alive – which was just as well since, in 2011, GSC Game World founder Sergiy Grygorovych dropped a bombshell by closing the company – by that stage getting stuck into the development of *STALKER 2* – down. But that was to be far from the end of the *STALKER* legend. GSC Game World was reopened in 2014, with Ievgen Grygorovych (Sergiy's brother) appointed CEO, and in 2018, the company announced it had begun working once again on *STALKER 2*.

As if *STALKER 2*'s development hadn't been troubled enough, we all know what happened in 2022: Russia invaded Ukraine. Suddenly Kyiv was under attack, but GSC Game World had planned for that eventuality, keeping a fleet of buses ready to drive the team and much of their equipment to Ukraine's western border. Eventually, the team wound up in Prague, although many opted to stay in Kyiv, often working under siege-like conditions. GSC Game World, creditably, told its staff that if they wanted to join Ukraine's existential fight, they could, and the company would continue to pay them. Many did, and sadly some were lost to the war.

By that stage, GSC Game World's determination to plough on in the face of relentless misfortune had been given further fuel by *STALKER*'s elevation to the status of a national Ukrainian treasure – indeed, a cultural object that was seen as a contributor to Ukraine's national identity. Like *STALKER*, many Ukrainians had been displaced around Europe, with the very existence of their country under threat, and *STALKER* provided comfort for them.

On a visit to GSC Game World in Prague in late-2024, creative director Mariia Grygorovych explained to us that Ukraine was only properly able to reclaim its national identity when the break-up of the former Soviet Union occurred, just after the Chornobyl disaster – and since *STALKER* was very much focussed on Chornobyl (albeit with plenty of added fantasy elements), it had become a touchstone of Ukrainian national identity.

Before the Russian invasion, *STALKER* fans had even started to emulate the game in real life, dressing up as STALKERs and entering the Chornobyl Exclusion Zone, so they could film themselves exploring abandoned houses and the like – surely one of the most extreme forms of cosplay yet (although thankfully, none went as far as to emulate the game's gunplay). Recognising the game's significance, Russian hackers mounted a hostile campaign against the GSC Game World team in Prague that continues today.

While finishing off *STALKER 2* (which was released on 20 November 2024), GSC Game World also refreshed *STALKER*: Shadow of Chernobyl, *Clear Sky* and *Call Of Pripyat* with a remaster package entitled *STALKER: Legends Of The Zone Trilogy*. That brought the original *STALKER* set of games to a new audience, including those who prefer to play on the current crop of consoles (including the Switch). Now, GSC Game World has announced that it is working on two major items of DLC – in the vein of *Clear Sky* and *Call Of Pripyat* – for *STALKER 2*.

But if you're keen to find out what all the original *STALKER* fuss is about, *STALKER: Legends Of The Zone Trilogy* provides an ideal means of doing so. If you dive into it, you'll find a brutal, uncompromising, ambitious survival-shooter which, while it may lack polish and graphical fidelity by modern standards, more than makes up for that with sheer atmosphere, satisfyingly challenging gameplay and a game world packed with so much personality that you might just end up living a vicarious life in it. Against the most insurmountable odds, the *STALKER* legend lives on. ★

» [PC] By the time *Call Of Pripyat* came around, GSC Game World had refined its user interface to provide more useful information about equipped ammo and health-restoring items.

» [PC] Trading in *Clear Sky*: it's always worth saving up for the best armoured suit on offer, however pricey it may be.

» [Switch] You'll encounter various mutated animals while exploring the Zone.

» [Switch] *Legends Of The Zone Trilogy* Is a great introduction to the series.

SURVIVING STALKER

SIX HANDY TIPS FOR MAKING IT THROUGH THE GAME

SAVE OFTEN

Unfortunately checkpointing isn't *STALKER*'s greatest strength, but you can save all of the *STALKER* games at any point – even when you're mid-way through picking off a bunch of enemies. Since you will die frequently, it is best to save often to give yourself the best chance of success after respawning after your death.

PAY ATTENTION TO AMMO

Particularly in the early stages of the *STALKER* games, ammo is hard to come by. As you progress, though, it becomes both more plentiful and more exotic – equipping armour-piercing bullets, for example, can pay dividends against soldiers or mutants, and flat ammo makes sniping way more accurate and effective.

EQUIP THE RIGHT GUN

You can only equip one gun apart from the pistol, so pick the right one after assessing your ammo stocks and the enemies you face; re-equipping your main weapon shouldn't be attempted during a gun-battle. It usually pays to have a Viper sub-machine gun as well as an AKM-style automatic rifle. If forced to use the pistol, go for headshots.

HUNT THOSE STASHES

The more characters you talk to, the more leads you find as to the whereabouts of stashes. You can think of finding stashes as the game's form of grinding. Having trouble with a group of enemies? A stash might just provide the ammo and exotic weaponry you need to prevail.

RANSACK JUDICIOUSLY

It's vital to scavenge as much as you can from any dead bodies, but there's nothing worse in *STALKER* than being killed while you're ransacking a stiff, so deal with all nearby enemies first. Once you start hitting your inventory's weight limit, it's time to be more selective. Avoid the temptation to loot ammo for weapons you don't like.

USE TRADERS AND TECHS

Traders can provide ammo for your favourite weapons and improved body armour, while relieving you of heavy inventory items. Techs, meanwhile, can make your weapons more effective. Well-used weapons jam often and armour wears out, but while you can't repair them in the original game, later instalments are more forgiving in that regard.

» [PC] *STALKER 2*'s rendition of the Zone is even more gloriously run-down and evocative than that of its predecessors.

MORE STALKING

LET'S EXAMINE THE FURTHER INSTALMENTS OF THE STALKER FRANCHISE

STALKER: CLEAR SKY (2008)

The first expansion for *STALKER*, *Clear Sky*, is a prequel, in which you play Scar, a STALKER uniquely able to survive violent weather emissions. As you make your way to the centre of the Zone, you must negotiate a full-on faction war, picking your favoured sides. *Clear Sky* added weapons-repair and upgrading plus a dominant-faction system to the *STALKER* blueprint, which was welcome. Its depiction of a less settled Zone than the original game makes it worth checking out.

STALKER: CALL OF PRIPYAT (2009)

Call Of Pripyat takes up the storyline after the original game's events, with the centre of the Zone suddenly accessible after Strelok disabled the Brain Scorcher. You play a soldier masquerading as a STALKER, sent in to find what happened to other soldiers the military helicoptered in. *Call Of Pripyat* added new enemies and areas, further refined the upgrading and repair systems, slightly improved the interface and definitely ramped up the horror and weirdness. It follows on beautifully from the original game.

STALKER 2 (2024)

It's a miracle *STALKER 2* was ever released: Russia's 2022 invasion of Ukraine caused the majority of developer GSC Game World to relocate to Prague. But that just made it more determined to craft a true sequel to the original game, using modern technology. And that's precisely what *STALKER 2* is: it stays utterly true to *STALKER*'s hardcore principles – it's still gloriously unforgiving and often chaotic. But it has a much more prominent story, and its game world and graphics are deep and lush.

DEVELOPER Q&A

WE QUIZZED GSC GAME WORLD'S CEO AND GAME DIRECTOR OF STALKER 2 IEVGEN GRYGOROVYCH, AND GSC GAME WORLD COMMUNICATIONS DIRECTOR ZAKHAR BOCHAROV, ABOUT THE 2024 REMASTERING OF THE STALKER TRILOGY AND STALKER'S FUTURE

When you decided to remake the first three *STALKER* games for modern consoles, what did you set out to achieve with the resulting *STALKER: Legends Of The Zone Trilogy*?

ZB: The release of *STALKER 2* definitely meant reaching a new console audience – we knew this during the development of the sequel. The idea that the original trilogy should also be available to console players felt very organic and natural. We wanted to deliver the same legendary experience that PC players had to a new audience, but in an accessible form and with some nice improvements along the way (besides controls, we also added things like Achievements). Judging by the feedback from the press and players, we succeeded across all platforms, including the Switch.

How did you balance preserving the original atmosphere of *STALKER* and its two sequels with bringing them more up to date?

ZB: In the console version of *Legends Of The Zone Trilogy*, all the games run on the X-Ray Engine, but on its latest version – the one used in *Call Of Prypyat*. However, this applies strictly to the technical side. The X-Ray Engine performed well on consoles, even though there were initial doubts. In terms of atmosphere, the games differ slightly. Shadow Of Chernobyl feels like the darkest part in terms of atmosphere, *Clear Sky* became a bit more approachable with its vibe, while *Call Of Prypyat* is the closest to a pure sandbox with a wealth of side stories, and its tone reflects that.

The original *STALKER* was designed for keyboard and mouse; how did you set out to refine the games' control systems so they were playable on gamepads?

ZB: *STALKER* is a very hardcore and challenging shooter. Survival and solitude are in the DNA of the franchise – the player constantly feels their struggle against a hostile environment, barely scraping by, never achieving full comfort, always forced to balance on the edge of survival. Of course, the controls and shooting mechanics are a key part of that experience.

Some gamepad control solutions were obvious – like the radial weapon menu. Everything else, including fine-tuned adjustments to the shooting system, aim assist, optimising interface navigation and even movement speed, was implemented gradually with constant checks to ensure it stayed true to the authenticity of the experience. We're incredibly grateful to our partners at Mataboo, who worked on these versions.

Very few games have *STALKER*'s longevity. What do you think are the main reasons behind the fact that people are still playing the first three *STALKER* games so long after release?

IG: The *STALKER* series has a pretty unique gameplay loop. This is a game about expeditions. The player needs to have a rough idea of the challenges they'll face and make the necessary preparations. Understanding your current goal means understanding your needs, what you'll gain, and how you'll make use of it. That's the complexity of needs, and the game's pace, which is controlled by the player and their priorities.

Thanks to the fact that the world is alive and full of points to explore, there's plenty of activity – survival elements are ever-present, and the number and scale of expeditions are largely determined by the player. This is what makes *STALKER* so immersive and shapes that special atmosphere.

At the *STALKER 2* preview last year, you explained how the original game became an important element of national Ukrainian culture – a cultural artefact, if you like. Can you give some examples of how that was manifested?

IG: First of all, it's a game about Chornobyl. Chornobyl is a huge tragedy for Ukraine. But Chornobyl *is* Ukraine. In fact, Chornobyl is located quite close to Kyiv, and you can get there by bus in roughly an hour. *STALKER* was the first Ukrainian game of this scale, it was the first Ukrainian game to become so popular and recognisable in the West, and it frequently appears in lists of the best PC shooters.

It drew attention to Chornobyl, and through it, to Ukraine. Trips to the Zone became exponentially more popular after the game's release. *STALKER* turned into a lifestyle – fans started organising role-playing games, paintball competitions, and more. They began cosplaying, writing books and fanfiction, creating mods. It became a mood, a way of life.

This undoubtedly brings the world's attention to Ukraine, showcases Ukraine's cultural heritage, and is important for Ukraine. Especially now. You don't truly understand how vital your identity is until someone tries to deliberately and systematically destroy it. Normally, you don't even think about the essence of your identity – there's no reason to, you just live. When the full-scale war began, when Ukrainian culture faced the threat of annihilation, we realised how crucial it is for us to recognise ourselves as Ukrainians. How important it is to show this identity to the world. How essential it is to distinguish ourselves from Russia, so that people globally stop seeing us as a colony. We want to share our culture with the world. We want players, through our games, to become fascinated by Ukraine, to want to learn more about our history, our independence.

Now that *STALKER 2* is out and generating a whole new audience, are there any plans to follow it with new instalments in a similar manner to *Clear Sky* and *Call Of Prypyat*?

ZB: Yes. We've openly announced two major story-driven DLCs for *STALKER 2*, and we're already working on them – in a way, it's an approach similar to *Clear Sky* and *Call Of Prypyat* for the original trilogy. The DLCs will feature interesting discoveries, significant storylines important to the entire series, and unconventional solutions. The work is in full swing, and we can't wait to share more details.

Celebrating The NINTENDO

NINTENDO'S QUIRKY HARDWARE DESIGN MAY HAVE RAISED A FEW EYEBROWS TWO DECADES AGO, BUT THE BRILLIANT GAMES IT ENABLED DREW IN PLAYERS REGARDLESS OF AGE OR GENDER. RETRO GAMER SPEAKS TO THE PEOPLE WHO MADE, SOLD AND DEVELOPED GAMES FOR THE DS AS WE CELEBRATE THE BEST-SELLING HANDHELD EVER

WORDS BY NICK THORPE

DS

We're going to pose a question to you all, and we want you to answer it honestly. If someone had told you in 2004 that Nintendo was about to abandon the Game Boy, would you have believed them? While each of Nintendo's home consoles to that point had sold less than its predecessor, the Game Boy family of consoles had been the company's golden goose, a reliable set of earners and a brand that had become synonymous with handheld gaming as a whole over its 15-year history. So *of course* Nintendo wouldn't do that, it would be a ludicrous thing to do. However, history tells us that while it took a while, that's exactly what Nintendo did – and it was all thanks to the Nintendo DS.

The Nintendo DS was first announced in a press statement in January 2004, with Nintendo's president Satoru Iwata stating, "We have developed Nintendo DS based upon a completely different concept from existing game devices in order to provide players with a unique entertainment experience for the 21st century." Nintendo revealed that the console would have two three-inch screens and two processors, with GamesIndustry.biz noting in some reports that the screens would be backlit and the processors would be an ARM9 and an ARM7 – all of which turned out to be accurate. Nintendo teased that the initial announcement was "but a glimpse of the additional features and benefits" that would be revealed in full at E3 that year, and that the system would be marketed separately to the GameCube and Game Boy Advance.

> "NINTENDO HAVE A KNACK OF MIXING THINGS UP JUST ENOUGH TO FORCE DEVELOPERS TO THINK OBLIQUELY"
> **PAUL HUGHES**

When Reggie Fils-Aime pulled out the DS during Nintendo's E3 presentation in Los Angeles, he dubbed it the "developer's system" and said, "In creating DS, we've given the world's most talented game makers new tools to work with, new ways to express their imaginations and of course, in the end, new enjoyment for all of us. DS not only changes Nintendo, it changes our industry." The system boasted full 3D graphics, the lower display functioned as a touch-screen, and there was a microphone too. A variety of games and tech demos were shown, with a handheld version of *Super Mario 64* doing the most to turn heads. Reactions to the new machine were mixed. While the DS was undoubtedly a step up from the Game Boy Advance, it wasn't a graphical match for Sony's PlayStation Portable and some worried that Nintendo was leaning too heavily on gimmicks.

How did developers feel about it? "The first DS was a bit chunky to be honest, and in the early days I think developers struggled to tame the hardware and use it to their advantage," says Paul Hughes, who worked on a variety of *Lego* games for the DS at TT Games. "But all said and done, it had 3D hardware, and frankly it was by Nintendo – you never

Interviewees

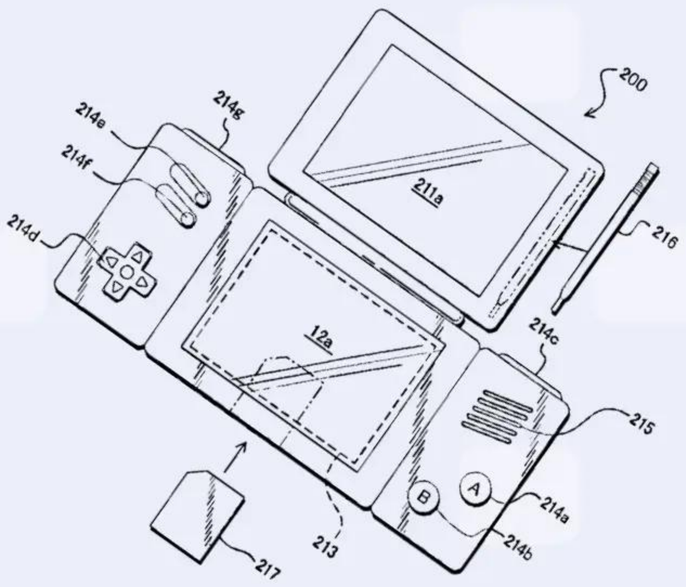
MATTHEW CASTLE
THEN Games editor, *NGamer*
NOW Senior producer, We Are Reach

PAUL HUGHES
THEN *Lego Star Wars The Complete Saga*, *Lego Batman: The Vidogame*
NOW Head of technology, Ripstone

PAUL MACHACEK
THEN *Diddy Kong Racing DS*, *Viva Pinata Pocket Paradise*
NOW Director of quality, Rare

SIMON MILLER
THEN Games editor, *nRevolution*
NOW Progress Wrestling Proteus Champion

PAUL MONAGHAN
THEN Gamestation, HMV
NOW Editor, *Pixel Addict*



» Here's one of the very earliest concepts for the DS, as shown in the console's US patent.

» [DS] Seeing the revolutionary *Super Mario 64* squeezed onto a handheld and updated was mighty impressive.

write off Nintendo hardware, they have a knack of mixing things up just enough to force developers to think obliquely and pull off some original games tailored to whatever new hardware quirk came along."

Paul Machacek, who worked on Rare's DS games, didn't feel it to be as odd a design as some did. "When I first saw it there was a familiarity already. Back in the Eighties when Nintendo were doing their *Game & Watch* line, some of those devices were clamshell folding with two screens, so it felt as if they were simply bringing that form factor up to date with modern games on carts," he tells us, before explaining the challenges posed by the new inputs. "Whilst there were PDAs which had touch-screens, the DS was aimed at gaming and so there would be a shift in thinking for controller-based developers to embrace this new interface. There would be a jump for traditional console developers to think about using a second screen and touch. It really then came down to designing bespoke experiences for this new platform, or cherry-picking existing games to bring across that would fit nicely."

Matthew Castle, who covered DS games regularly in *NGamer*, admits, "I'm not sure I fully appreciated the DS at first glance. Back then you often thought about new hardware in terms of graphical grunt, and I was a bit too eager to focus on how good *Mario 64* looked on a handheld, rather than the potential of its strange form factor. A handheld N64 *is* an attractive pitch, but it's definitely not how I think of the DS now. It was the weirdness of what followed, enabled by its dual screens and colourful inputs, that really resonated."

What of the claims that the DS would be a 'third pillar' of Nintendo's hardware strategy? "I hoped it was true because I loved the GBA," says Simon Miller, who regularly covered the DS in *nRevolution*. "It was never going to happen, though, because it would've been nuts. Why would a developer invest time in the GBA when you have the DS pushing things forward? I seem to remember some games got dual releases but again, it meant whatever happened to the GBA version wasn't the real deal – the innovation aspects had been taken out. It also always makes sense to stride forward and leave the last iteration in the past. There's never a need to try and hedge your bets that way. If you're done, you're done!"

The Nintendo DS launched on 21 November 2004 in North America, followed by Japan on 2 December. Demand in these two territories was enormous and Nintendo had already shipped 2.8 million consoles by the end of the year, exceeding the company's own forecasts by 800,000. In 2005, Australia received the system on 24 February and Europe followed on 11 March. Paul Monaghan, editor of *Pixel Addict* magazine, remembers the build-up to the DS launch while working at Gamestation. "With a strong launch line-up you were expected to push the bundles ranging from

> "THE EARLY TITLES WERE ALWAYS TRYING TO FIGURE OUT HOW TO BE MARKETABLE BUT ALSO SHOW OFF WHAT THE MACHINE COULD DO"
> **SIMON MILLER**

FOLDABLE FAMILY

WHAT ARE THE DIFFERENCES BETWEEN THE FOUR DS MODELS?

DS
2004

The original model of the DS definitely isn't the prettiest, but doesn't have any major disadvantages when it comes to playing games. Battery life is solid and while it has the smallest screens of the range, they're certainly adequate. Game Boy Advance cartridges fit into their slot nicely too.

DS Lite
2006

With a sleek look inspired by Apple's devices of the time, the DS Lite is smaller and lighter than its predecessor, with better battery life and brighter screens. Other than smaller shoulder buttons, the only downside is that Game Boy Advance games stick out awkwardly from their shallow cartridge slot.

DSi
2008

This model ditches the Game Boy Advance slot, and adds a faster CPU, more RAM and 256MB internal storage for downloadable DSiWare games. There are also two 0.3 megapixel cameras. Importers beware – DSi-enhanced games are region locked on DSi hardware, but will work normally on earlier models.

DSi XL
2009

The final DS has exactly the same features as the DSi, but is aimed at an older audience. It's larger and heavier than the prior models, with screens that are 93% larger than those of the original DSi. It's less common than its older siblings, so generally sells for more.

» Eager customers line up at Virgin Megastores for the record-breaking UK launch of the DS.

£104.99 to around £200 including carry cases, extra stylus and of course games. The likes of *Super Mario 64 DS* and *WarioWare: Touched!* were in high demand, *Zoo Keeper* and *Project Rub* a close second tier and then the rest were mainly picked up as afterthoughts."

Launch day itself was hectic. "The Gamestation I worked in was inside a Blockbuster Video store. This meant we closed at 10pm on Thursday evening, and had two hours to prepare all customer orders to reopen the doors at midnight," he continues. "Consoles were matched up with the desired games and accessories and before we knew it, it was all systems go until 1am. One full hour of excited customers, keeping a queue moving whilst trying to upsell more DS-related product where possible. Some customers hadn't preordered but were still happy to leave with a game for the DS, as any orders not collected by the end of the weekend would be sold on the Monday. Harsh, I know, but demand was huge!" It certainly was – UK customers bought nearly 87,000 DS consoles in its first two days on the market, breaking the record set by the GameCube in 2002.

While sales were strong, some of the early software reflected how developers were still trying to figure out how best to use the hardware. Games that didn't utilise both screens well and employ the touch-screen well tended to be criticised for not making the most of the console's unique features, but the games that incorporated them heavily often came across as experiments as much as full-fledged games. *Pac-Pix* was described as "little more than a tech demo that's been painfully stretched to breaking point" by *games™* and GameSpot's review of *Yoshi Touch & Go* said that, "The novelty of the gameplay is almost palpable, but so are the game's tech demo roots."

Simon agrees that some games came across that way, but quickly qualifies that. "I don't think I minded that, though. Admittedly dropping full-priced money on games that weren't fully realised wasn't ideal but at the same time, that felt par for the course. It was the same for the Wii a few years later. The early titles were always trying to figure out how to be marketable but also show off what the machine could do," he recalls. "I think there's a reason we don't talk about *Yoshi Touch & Go* these days and I bet Nintendo knew this, otherwise it would've been a fully fledged *Mario* game. We can't put the mascot in jeopardy, though, so the poor dinosaur takes the heat instead!"

"In the same way it took a few years to appreciate that the DS' strengths lay in its idiosyncrasies, it took a while to rewire our brains as to what a good DS game was," says Matthew. "I avoided a lot of the earlier 'tech demo' games because reviews scared me off – I don't think critics had the right mindset or language to talk about them in a valuable way. Reviewers saw very short experiences for £30 and dissuaded you on a 'bang for your buck' basis. Whereas now, I think people are a bit more appreciative of one-of-a-kind experiences or games that feel tailored to their hardware. I yearn for interactions that feel this bespoke. Perhaps that's an easier stance to have when you can hoover up oddball offerings for a tenner at CEX."

THE DS BEFORE TIME

LOOKING BACK AT THE HANDHELD'S FIRST E3 SHOWING

» We're glad Nintendo reworked the DS before it came out, because this thing isn't pretty.

While we wouldn't say that Nintendo rushed the DS to market, it certainly wasn't ready for prime time when it was first unveiled at E3 2004. Because the original retail model of the DS looks a bit ungainly next to the DS Lite and DSi, it's easy to forget that it was considered to be a marked improvement over the somewhat cheap-looking prototype. This early hardware has a few notable differences, most obviously the swapped positions of the Power button and the Start and Select buttons, hinges positioned at the edges of the device rather than centrally, and a more rounded d-pad.

Although the console was only six months from launch, very few of the eventual launch games were on show. *Super Mario 64 DS* and *WarioWare: Touched!* were in advanced states, and *Metroid Prime Hunters* would become the console's pack-in demo. Other showings primarily consisted of tech demos, with varied fates. *Pac-Pix* and *Pac 'N Roll* would eventually be developed into full releases, as would *Balloon Trip*, which became *Yoshi Touch & Go*. Demos featuring Mario's face and Pikachu, were stripped back and became small parts of full games.

Others never went anywhere, including a demo in which you rubbed the screen to make Sonic run, and ones in which you used the touch-screen to carve objects and play table hockey. Most interestingly the *Submarine* tech demo would never become a full DS game, but was instead developed into *Steel Diver*, which was a 3DS launch game in 2011.

» [DS] It's surprising that *Submarine* didn't resurface until the 3DS arrived, it's quite good.

» [DS] We're not surprised that *Table Hockey* never went far – it demonstrates touch well, but that's it.

GET CONNECTED

HOW DID THE DS INTERACT WITH OTHER NINTENDO CONSOLES AND GAMES?

Game Boy Advance

A number of early DS games offer little bonuses if they detect a related game in the Game Boy Advance slot of your console. For example, you'll get extra costumes in *Frogger: Helmet Chaos*, or a new ability in *Final Fantasy Tactics A2: Grimoire Of The Rift*. The most extensive use of connectivity is found in the *Pokémon* games, which allow you to bring your Pokémon into the newer games via the Pal Park area.

Other DS software used Slot 2 for accessories, including the Guitar Grip for *Guitar Hero: On Tour*, a paddle controller for *Arkanoid DS* and a RAM expansion cartridge for the Nintendo DS Browser. The Rumble Pak was bundled with *Metroid Prime Pinball* and supported by about 50 other games. Most interestingly, an expansion pack for *Daigasso! Band Brothers* was released on a Game Boy Advance cartridge in 2005 – a concept that was sadly never revisited.

Wii

While it was possible to download DS game demos from your Wii via the Nintendo Channel, the two systems occasionally connected in games too. Some offered small bonuses, like the extra world unlocked when you connect *Geometry Wars: Galaxies* on both platforms, as well as standard features like character transfer between *Animal Crossing: Wild World* and *Animal Crossing: City Folk*. *Driver: San Francisco* didn't connect to a handheld game – a second player could just view the map and place roadblocks using the touch-screen.

Some games were more adventurous – for example, the Japan-only release *Simple 2000 Series Wii Vol 1: The Table Game* allows you to use the DS as a controller, with its display allowing you to keep your hand private in multiplayer card games. Then there was the action RPG *Final Fantasy Crystal Chronicles: Echoes Of Time*, which allowed for up to four Wii and DS systems to connect together for online or offline multiplayer.

Fortunately, it was apparent that bigger things were around the corner at E3 in 2005. Nintendo announced the Game Boy Micro, but the final GBA model was something of an afterthought – Nintendo was going all in on the DS. "I thought this E3 was the time when the DS was truly born. What with the Wi-Fi, *Mario*, *Metroid* and co it seems like now we are going to be able to really experience what Nintendo had intended from the beginning," wrote *Cube* magazine reader Randy_Pan in 2005. The magazine agreed, saying that "the lack of decent releases" was holding the system back in the present, but noting that in Japan, "The DS is consistently outselling Sony's machine week after week, and it's all down to strong software such as *Nintendogs*, *Kirby's Magical Paintbrush*, *Gundam SD* and *Brain Training*." The magazine felt that represented a "good indication of what could happen both here and in the US".

> "THE BIG CHALLENGE WAS REALLY WHAT DO WE DO ABOUT TOUCH"
> **PAUL MACHACEK**

This proved to be somewhat prophetic on a number of fronts. *Mario Kart DS* was not only the latest iteration of a franchise beloved by core and casual gamers alike, but also represented Nintendo's first big push into online gaming. That was something of a surprise, as the company had given mixed messages around its commitment in this area. While Reggie Fils-Aime had proudly trumpeted the console's wireless connectivity at E3 2004, saying "it's beyond online, it's no-line", just a couple of months later in July 2004, Satoru Iwata told the Japan Economic Foundation that "customers do not want online games". While he didn't rule out the possibility of making online games, he did state his belief that "at the moment, most customers do not wish to pay the extra money for connection to the internet, and for some customers, connection procedures to the internet are still not easy".

To its credit, Nintendo tried hard to overcome the problems Iwata had identified, starting by making the online gaming service free. Wireless internet access was still relatively uncommon, so Nintendo released a USB dongle to allow players to share their wired broadband connection to the DS. It also signed deals with McDonald's in the USA and The Cloud in the UK to offer free Wi-Fi access to Nintendo DS users. Reportedly, 45% of first-week *Mario Kart DS* owners in America played online – a figure Nintendo proudly compared to the 18% of *Halo 2* owners that had played on Xbox Live in its first three weeks.

Then, there was *Nintendogs*. "I thought the casualness of *Nintendogs*, a new Tamagotchi, was really smart and it brought forward the notion of 'comfort games', games that are casual ongoing experiences, rather than tests of skill," says Paul Machacek. The virtual pet game was a key release because it sold mostly to girls and young women, broadening the demographics of the console. It was not only the best-selling DS game in Europe in 2005, but eventually became the second best-seller

» [DS] *Pac-Pix* wasn't a long game, but it did show off what the DS could do rather well.

» [DS] *Nintendogs* revitalised the virtual pet formula and really broadened the appeal of the DS.

» [DS] The sales of the DS allowed publishers to take risks on properties like *Phoenix Wright: ce Attorney*.

for the console of all time. When asked to name favourite DS games, Paul Hughes says "I'm guessing everyone said *Dr Kawashima's Brain Training*! What a lovely use of the touch-screen – holding it like a book!" When this game made its way outside of Japan in 2006, its concept of daily mental exercises proved very appealing to adults, and sold by the bucketload to become the console's fourth best-selling game ever.

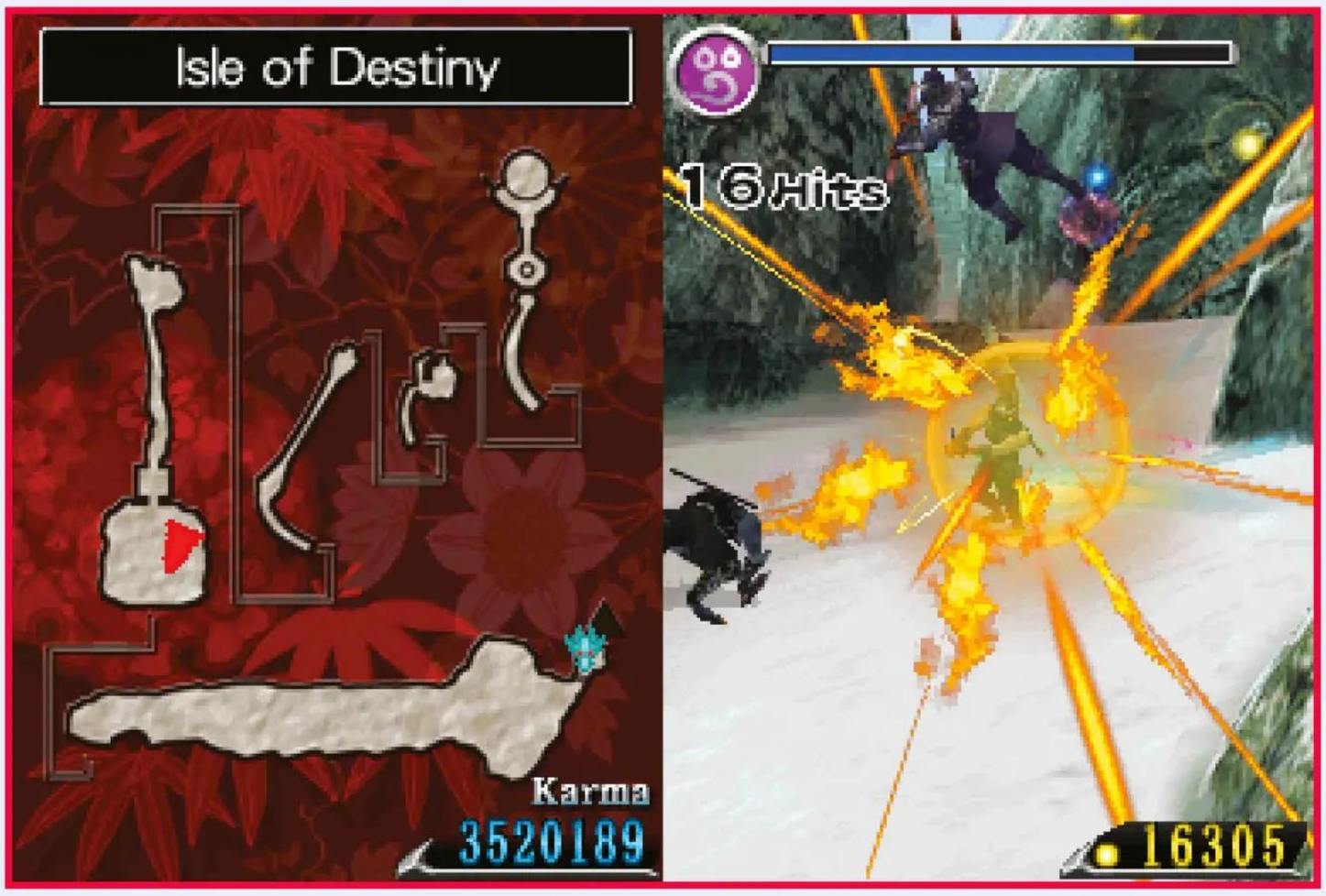
Why were those games able to succeed with audiences outside of the usual gaming demographics? "I think it's because of the hardware," says Simon. "All of a sudden you could almost tailor your games to a wider audience because putting a stylus in someone's hand is far less intimidating than a controller. I'm sure we've all played an FPS with someone not well versed and they spend the whole time looking up and spinning around. You've gotta get that down before anything else. With the DS, just use the pen, essentially."

Nintendo quickly sought to capitalise on its expanded audience in 2006. The new DS Lite refined the look of the console, and the Touch! Generations branding was introduced to highlight games that offered a broad appeal and simple touch-screen controls. Print adverts showed a diverse range of players enjoying those games, while TV adverts would show Girls Aloud battling it out in *Mario Kart DS* and Sir Patrick Stewart using *Brain Training*. "It was the first gaming campaign that grew so big that other publishers started spoofing it," Matthew recalls. "I'll always chuckle at Steve Davis mimicking Nicole Kidman's *Brain* ▶

» The DS Lite boosted interest in the platform, resulting in major queues as seen at the Japanese launch.

» [DS] *Cooking Mama* became an unexpectedly huge hit for the then-small publisher 505 Games.

» [DS] *New Super Mario Bros* sold a whopping 30.8 million copies, making it the console's most-popular game.



» [DS] Action games rarely used the 'book-style' DS orientation, but *Ninja Gaiden: Dragon Sword* did.

» [DS] Games like Ubisoft's *Imagine* range were dismissed as shovelware, but they served the expanded DS audience.

▶ *Training* advert to promote a DS snooker game." With the mid-year reveal of the Wii highlighting Nintendo's philosophy of lowering the barrier of entry to games via motion controls, it was clear that the company was no longer in the business of selling to gamers, so much as selling games to everyone.

Was it clear to Matthew that the DS was well on its way to becoming an enormous hit? "When ageing relatives mentioned the DS to me unprompted in late-2006 it was clear it was breaking out in a way videogames didn't normally," he confirms. "Also, the fact that sales of our Nintendo magazines didn't explode in tandem – it was so obvious we were talking to a fraction of the audience Nintendo was chasing. It's maybe a bit of a downer thinking about DS as being the result of clever marketing rather than my mum finally appreciating the inherent value of *Ace Attorney*, but it did feel that way."

Capcom's courtroom drama is an interesting game, because it's a truly beloved DS game.

"*Phoenix Wright: Ace Attorney* was lovely, with big and bold visuals, like an interactive manga comic," says Paul Hughes. Matthew agrees, saying, "The *Ace Attorney* series is an all-timer for me: its fusion of Shu Takumi's mystery writing, the rip-roaring score and storylines that paid off over multiple games felt like an anime you could play." However, the series was already up to its third entry on the GBA in Japan – it was only the success of the DS that convinced its publisher to take a chance on localising it, for which it was richly rewarded as the first game repeatedly sold out.

Other games that would have almost certainly never left Japan before, such as

ONLINE ESSENTIALS

Mario Kart DS

2005

Online multiplayer was a natural addition to the famous racing franchise, though it was a bit basic compared to local wireless play – races were limited to four players and 100cc speed, 12 of the tracks weren't playable, and items worked a little differently. It was still a hugely appealing proposition.

Animal Crossing: Wild World

2005

8/31
I crave apples!
What kind of backwater town doesn't have apples?! Mine! It would be great if someone shared theirs...
Hayseed Hilda
Close

While you could only visit your friends' villages and all the residents disappeared when you did, the addition of online play felt like a natural addition to the *Animal Crossing* formula. It helped this sequel sell far more copies than the original, and set the series up for future success.

Tetris DS

2006

Tetris DS may not have been the first online *Tetris* game, but the series has always felt at home on handhelds and this is one of the best versions. You can play standard matches or the Push Mode against a single opponent, or take part in four-player matches with items.

Cooking Mama, were also localised to varying degrees of success. The DS soon became a platform with a hugely diverse range of games. "I think publishers were navigating uncharted territory," says Matthew. "Nintendo were rinsing the charts with virtual puppies, maths exercises and pub games, as well as excellent versions of some fan favourites; looking at that and extrapolating a winning formula must have been a nightmare. EA made an RPG, *Zubo*, about anthropomorphic drum people! It was absolutely baffling, but good fun seeing people scrabble for a piece of the pie."

> "WHILE IT'S TRUE DS HAD A LOT OF GAMES OUTSIDE OF THAT TRADITIONAL SCENE, IT WAS REALLY HOT ON SEVERAL CORE GENRES"
> **MATTHEW CASTLE**

Paul Machacek found himself working on the core end of the spectrum. "I suggested a port of *Diddy Kong Racing* for DS as it had been so successful a decade earlier, but knew that we needed to apply it appropriately to the hardware. There were also a few things in the original game that felt like they needed changing," he says. "We looked at the different hardware characteristics of the DS and tried to find features that could use them. The idea of blowing into the microphone to get a turbo boost was a quick off-the-cuff idea. Recording your own sounds with the microphone and applying them to in-game events was unique and allowed people to customise the game with the extra comedy of other players experiencing such sounds in multiplayer."

"The big challenge was really what do we do about touch," he remembers. "A member of the team suggested adding more tracks (which we did do) because 'more is better!' but I didn't agree with that standard sequel approach, and it didn't feel like a DS-specific thing to do. But 'touch' and 'new tracks' lingered and I suggested why don't we allow players to draw their own track?" Paul's idea stuck, and the team got to work. "We hacked out the basics of this pretty quickly. It had to be easy, fun, so we went with a set of standard block track pieces that could link together, and by drawing a squiggly line that would join up with itself we could then turn that into a corresponding track with the building-block track pieces. To keep collision detection easier and not have to worry about off-track scenery and furniture, we put it up in the sky so that if you drove off the track you would fall."

Viva Piñata: Pocket Paradise was an easier adaptation for the team at Rare. "*Viva Piñata* naturally lends itself so well to touch, with a stylus, because you can accurately point at things, click on them and control a shovel to directly terraform the garden with the stylus," explains Paul Machacek. "We were only going to put the garden in one screen, the touch-screen predominantly, and we designed a HUD with icons to access the tools, seeds and shop. There is a second important part of the game though as well with the Encyclopaedia, and being able to have that on the top screen for direct reference really helped simplify the game. We allowed players to swap the screens around so that you could touch the Encyclopaedia pages and everything in them (Pinatas, plants, seeds, tools, etc) were shown using standard unique icons which were clickable."

Paul Hughes remembers the challenges of trying to adapt multiplayer games for the unique hardware. "Certainly, with the first

» [DS] *Lego Star Wars: The Complete Saga* lets you use the force using the touch-screen.

» [DS] Both Matthew and Simon cite *Hotel Dusk* as one of their favourite DS games.

WHEN NINTENDO FINALLY EMBRACED ONLINE GAMING, IT DID SO IN STYLE

nintendo Wi-Fi connection

Metroid Prime Hunters

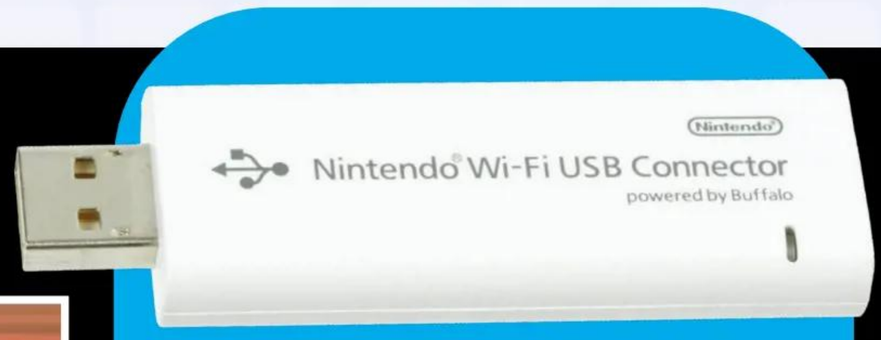
2006

A good first-person shooter has always been a key component of any console's online offering, and *Metroid Prime Hunters* fit the bill. It was one of the best-looking DS games when it launched, with a control scheme that allowed for precision aiming – and maybe the odd hand cramp.

Pokémon Diamond & Pearl

2006

The *Pokémon* series had always encouraged social gameplay, and players endeavouring to catch 'em all finally gained the ability to battle and trade Pokémon with friends around the world, rather than just the ones who happened to be within range of a link cable. This was a real killer app.



PLAY TODAY

The official Nintendo Wi-Fi Connection service was closed in 2014. However, some of the most popular DS games are still playable online thanks to the Wiimmfi community project, including all five here. For more information, head to kaeru.world and follow the Kaeru WFC instructions – you can do it without modifying your DS, simply by changing DNS settings. You'll need a router capable of using WEP security since that's the only type the DS supports, but this security is very outdated and weak so proceed at your own risk.

HOMEBREW AND THE HIGH SEAS

HOW FLASH CARTS ENABLED HOBBYISTS AND INFURIATED PUBLISHERS

» An example of the dual-slot flash carts that existed in the early days of the DS.

Nintendo has always been fiercely protective of its intellectual property rights, and rarely did it have more reason to be than with the DS. Flash cartridges were developed early, with the first generation generally using a DS card to bypass the console's security and the Game Boy Advance slot to actually load data. During the first couple of years of the console's life, piracy wasn't the biggest concern, but by October 2006 a forum user on a popular Nintendo homebrew site was already wondering if DS piracy was "getting too rampant".

The situation was put beyond doubt in early 2007 with the introduction of the R4 Revolution card, a simple device that just required a MicroSD card to store games. There was no need to frequent dodgy shops to find it either, as the R4 was widely available on sites like eBay and Amazon. Such cards were naturally advertised as a way for homebrew developers to run their games on real hardware, and there were some genuinely great games – the obvious likes of *Doom* and *Quake* were joined by an excellent touch-screen version of *Lemmings*, *PuzzleManiak* and *Warcraft: Tower Defense*. However, as Mike Jackson from *CVG* noted in 2008, "It may not say so in bold letters on the box, but these cards are popular purely because they run illegally downloaded DS games."

By January 2008, the trade body ELSPA claimed that, "In America it's thought 90% of DS users are playing pirated games," a claim that *Next Generation* advised you take with "a Texas-sized grain of salt". But it was a real issue and Nintendo tried to persuade the retailers to ban the products while launching various legal actions, and had over half-a-million R4 cards and other such devices seized between January 2009 and 31 July 2010 according to *MCV*. A specialist IP court in the UK ruled that devices like the R4 were illegal in July 2010 – but by that point, *MCV* noted that "developers and publishers have reduced their DS output" as the system's commercial prospects were weakened by piracy, and the 3DS had already been announced.

STOP PRESS
SHOPS TOLD – STOP
It's becoming harder to obtain a so-called 'piracy card' for the DS. SimplyGames.com has dropped the sale of the controversial R4 device and pressure has been applied to Amazon.co.uk and eBay. The card lets gamers play homebrew games but also allows copying of full-price software. Nintendo has been monitoring the situation and ELSPA is considering taking legal action.
R4
Revolution for DS
(NDSL/NDS)

» By 2008, Nintendo's struggles against the R4 were starting to hit the headlines regularly.

» Nintendo was able to produce far more units than it had forecast, but still struggled with early demand.

» [DS] *Viva Pinata: Pocket Paradise* used some pre-rendered graphics because they were less taxing on the hardware.

» [DS] The localised release of *Elite Beat Agents* was a response to the import popularity of *Osu! Tatakae! Ouendan!*.

few *Lego* games we did our level best to match the core mechanics of their console brethren, but at the same time knew that due to the dual screens we could add extra minigames to make up for bits that we were forced to miss," he explains. "For example, we couldn't have a full character party on-screen at the same time, so we had to swap in the co-op character via the touch screen. But then on *Star Wars* we had the dual screen rendered AT-AT section on Hoth tying up their legs, or the lightsaber training with Luke."

One game that Paul Hughes remains particularly proud of is *Lego Star Wars: The Complete Saga*. "Just getting the entire console game crammed into 64MB was a Herculean feat; especially as we went for all digital audio – I had chance to use John Williams' score played by the London Philharmonic, I was going to make that happen by hook or by crook," he recalls. "The camera and control systems were tailored for the DS as it only had digital d-pad input so we didn't want to hamper the player hitting tricky diagonals whilst the camera shifted around. Add to that we had to be very careful with camera framing to make sure you saw far enough ahead to not get 'pounced on', but at the same time to not blow the 4,000 vertex limit which would cause chunks of polygons to disappear."

The DS hit its commercial peak in 2008. That same year, *Forbes*' Brian Caulfield noted

» DS Download Stations could be found in various public locations, and let players download game demos.

» *Scrubs* stars Zach Braff and Donald Faison enjoy a spot of something. *Trauma Center*, maybe?

» *Pictochat* was built into every DS, and was a fun way to chat between games.

» [DS] *Chrono Trigger* saw its first official European release on the DS in 2008. Yes, it took that long.

» [DS] *Advance Wars* took a less cheery turn in *Dark Conflict*, or *Days Of Ruin* to our American friends.

that Apple's iPhone had the touch and motion controls that had made Nintendo's DS and Wii so successful, and that, "The ability to pour fresh software into the iPhone, wirelessly, at the touch of a button" via the new App Store could cause Nintendo problems. The DS got its own downloadable game store the same year, but it was only available to owners of the new DSi model. Meanwhile, the 2009 mobile game *Angry Birds* could easily have been a DS game, and by 2011 *PCWorld* opined that "The Nintendo DS and the Sony PSP are still selling, but these portable game gadgets seem like relics from an era when people used cell phones strictly to make and receive calls." Nintendo released the 3DS that year, and while the backwards compatible successor to the DS was a popular machine, it never came close to the heights of the original, which is still the best-selling handheld of all time with a staggering 154 million units sold.

> "THE EASE OF PICK UP AND PLAY GAMING WAS BROUGHT TO THE MAINSTREAM AND NINTENDO WANTED EVERYONE TO BE PART OF THAT"
> **PAUL MONAGHAN**

Some players are quick to deride this era of Nintendo, bemoaning a 'casual' focus and pointing to shovelware like *Russell Grant's Astrology* or Ubisoft's much-derided *Imagine* series. "While it's true DS had a lot of games outside of that traditional scene, it was really hot on several core genres," Matthew points out. "Square Enix did beautiful JRPG work with the *Dragon Quest* and *Final Fantasy* remakes, Atlus were drowning us in *Shin Megami* spin-offs, and there were loads of weeb-y adventure games and visual novels for Japanophiles." The console really does cater for all tastes, from the ridiculous shoot-'em-up action of *Bangai-O Spirits* to the sedate puzzles of *Polarium*. In fact, the console's best-selling game was *New Super Mario Bros* – an extremely traditional revival of the 2D platforming formula that made the character famous.

"Nintendo managed to master the whole age range with the DS (and later Wii), they just had that magic formula," says Paul Monaghan, summarising the appeal of the console. "Game series such as *Mario* and *Zelda* catered for gaming diehards and non-gamers or those returning to the hobby would eagerly buy *Brain Training*, the *Professor Layton* titles or even the many shovelware titles featuring classic puzzles. The ease of pick-up-and-play gaming was brought to the mainstream and Nintendo wanted everyone to be part of that. Being able to interact with games with the stylus helped you feel more involved and just like the original advertising campaign requested – you just had to touch it."

And really, you still do have to touch it. As the Wii U's Virtual Console releases proved, the unique features of the DS mean that its games just don't quite feel the same on other devices. So get some friends together, send crude drawings to each other in Pictochat and then blast each other with blue shells in *Mario Kart DS* – you won't regret a moment of it. ✱

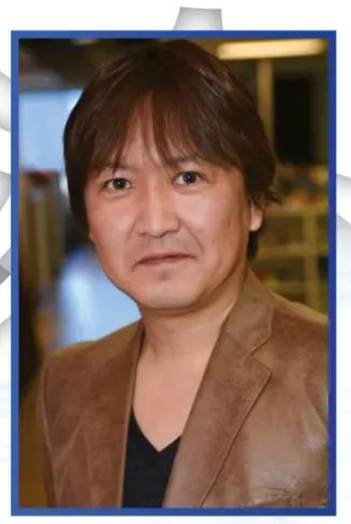
THE MAKING OF SONIC GENERATIONS

» [PC] An early concept image for the modernised Green Hill, featuring grind rails through a canyon.

» [PC] Plenty of attention was paid to properly updating 2D designs for 3D space.

THEY SAY THAT IF YOU WANT A JOB DONE WELL YOU'VE GOT TO DO IT YOURSELF, BUT WHEN ALL OF TIME AND SPACE ARE IN DANGER, ONE SONIC JUST ISN'T ENOUGH. TAKASHI IIZUKA EXPLAINS THE CREATION OF THE ANNIVERSARY GAME THAT CELEBRATED SONIC'S PAST WHILE PAVING THE WAY FOR HIS FUTURE

WORDS BY NICK THORPE



TAKASHI IIZUKA
■ Creative director at Sonic Team.

It's no secret that major birthdays can bring about a mild feeling of crisis – many of us will have spent some time reflecting on what we've done with our lives, and the things we wished we'd done. It turns out that videogame characters aren't immune from this either, and you only need to look at Sonic to see that. Sonic's tenth anniversary in 2001 was a time of great uncertainty for Sega, and while *Sonic Adventure 2* was a good game to celebrate the occasion, it served as a swan song for both the Dreamcast and the company's time in the console market. Five years later, *Sonic The Hedgehog* (commonly known as *Sonic 06*) arrived on Xbox 360 and PlayStation 3 and received a notably negative critical reception, marred by myriad technical issues and a setting and story that were perceived as out of character for the series. A botched Game Boy Advance conversion of the original Mega Drive game also launched in 2006, solidifying Sonic's 15th anniversary as an occasion to forget.

Sonic's 20th anniversary broke the cycle with *Sonic Generations*, a game in which Sonic teams up with his past self in a time-travelling adventure that mixes 2D and 3D platforming – but before we discuss that game, we have to return to the past ourselves to examine its heritage. In the wake of *Sonic 06*, it was clear that the *Sonic* series needed a change of pace and Sonic Team was evidently aware of that, as the 2008 release *Sonic Unleashed* overhauled the structure of 3D *Sonic* games. Ditching the movement model that had characterised the series since *Sonic Adventure* launched ten years prior, *Sonic Unleashed* adapted the gameplay of the DS hit *Sonic Rush* into 3D, with a Boost mechanic that encouraged constant forward motion. As Sonic ran through the stages, they would automatically switch from a standard forward-looking view to side-on sections that evoked memories of the classics.

While *Sonic Unleashed* was received more warmly than its predecessor and represented a definite step in the right direction, opinions were still mixed. "*Sonic Unleashed* also featured two distinct styles of gameplay. Third-person, combat-focussed action games were popular at that time, and we wanted to explore how that could be represented in a *Sonic* title while reflecting on iconic Sonic moments that players love," says Takashi Iizuka, Sonic Team's creative director. That experimentation resulted in the creation of Sonic's stretchy-limbed Werehog form, whose stages were more akin to games like *Devil May Cry* and *Ninja Gaiden*. "Of course, we're always listening to fan feedback, and we took learnings to refine *Sonic* gameplay for more recent titles." That feedback clearly informed the direction of the next round of *Sonic* games, all of which kept platform gameplay at their core.

> "SONIC GENERATIONS WAS MEANT TO HIGHLIGHT ALL OF SONIC'S HISTORY SO IT'S IMPORTANT WE REPRESENTED EACH TITLE TO THE BEST OF OUR ABILITY"
> **TAKASHI IIZUKA**

Following the completion of *Sonic Unleashed*, Sonic Team began development of *Sonic Colours* for the Wii and *Sonic Generations* for the Xbox 360 and PS3 – both of which would build on the Boost style of *Sonic Unleashed*. *Sonic Colours* arrived in 2010 and focussed exclusively on Sonic as a playable character, with new Wisp power-ups to expand his range of abilities. The game was a critical and commercial success and while the side-on sections dominated gameplay, it showed more of what the Boost style could offer to the series. The Dimps-developed 2D platformer *Sonic The Hedgehog 4: Episode I* courted the nostalgia market in 2010, receiving favourable reviews and strong sales. However, heavily invested Sonic fans disliked the use of Sonic's modern design and mechanics, as well as oddities in the game's physics model.

IN THE KNOW

- **PUBLISHER:** SEGA
- **DEVELOPER:** SONIC TEAM
- **PLATFORM:** XBOX 360, PS3, PC
- **RELEASED:** 2011
- **GENRE:** PLATFORM

DEVELOPER HIGHLIGHTS

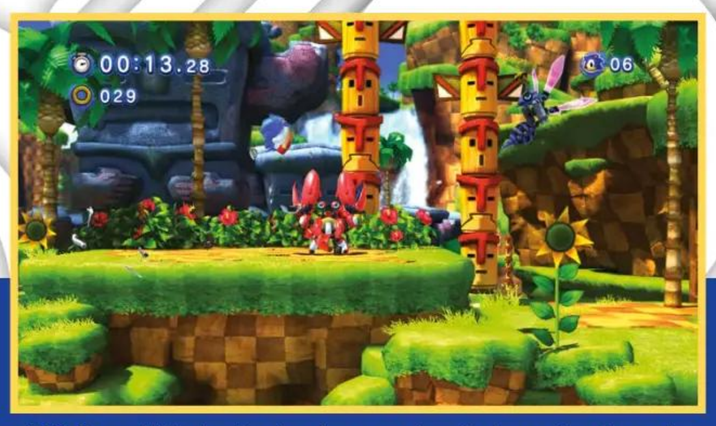
SONIC ADVENTURE 2
PLATFORM: DREAMCAST, VARIOUS
RELEASED: 2001

SONIC COLOURS (PICTURED)
PLATFORM: WII, VARIOUS
RELEASED: 2010

SONIC FRONTIERS
PLATFORM: VARIOUS
RELEASED: 2022

» [PC] Tails tries to avoid getting dragged away, as the Time Eater attacks Sonic's birthday party.

» [PC] The two Sonics meet for the first time, comparing their similarities and differences in the mirror.



» [PC] Green Hill is familiar, but far more visually dense than it was in its original 16-bit incarnation.

So finally, we come to *Sonic Generations*, which reprises the *Sonic Unleashed* concept of including two forms of Sonic. The game begins with Sonic's friends throwing him a surprise birthday party, complete with a chilli dog as a gift, only for a mysterious, shadowy creature to attack and drag the whole crew into a white void. Upon his arrival, Sonic finds locations from his past drained of their life and colour – as well as his friends in the same state. Soon enough, Sonic catches up with Tails and both of their past selves, as they try to right the crazy situation.

"From the very start of development, *Sonic Generations* was always intended as the ultimate celebration of Sonic and the franchise's highest moments from its past in one fun package," says Iizuka. "Combining both Modern and Classic Sonic made sense as we were honouring Sonic's holistic history which includes both designs." The pudgier, silent incarnation of Sonic from the Mega Drive days would feature exclusively in 2.5D stages and kept classic moves like the Spin Dash, while the long-legged, green-eyed version we know today would explore 3D stages like those of *Sonic Unleashed*, retaining his full repertoire of moves including sliding, wall jumps, stomps, homing attacks and of course the Boost.

> "WE WANTED THE FEELING OF NOSTALGIA TO COME THROUGH IN THE ENTRANCE SCENES OF THE BOSS AND RIVAL CHARACTERS"
> **TAKASHI IIZUKA**

Sonic Team consulted widely to find out which stages those should be. "Since Sonic's 20th birthday was such a big moment for the team, we wanted to make sure everyone at Sega had a say. We asked everyone in Japan, America and Europe who was working on *Sonic* games at the time to nominate their favourite levels, then we did more research with dedicated Sonic fans, and we made a shortlist," Iizuka recalls. Nine stages were chosen in total, split across three eras that broadly represented the Mega Drive games, the Dreamcast games and the more modern games. The inclusion of stages from *Sonic 06* and *Sonic Unleashed* surprised some fans, who hadn't expected Sonic Team to highlight games that were negatively received. "*Sonic Generations* was meant to highlight all of Sonic's history so it's important we represented each title to the best of our ability," says Iizuka.

For Green Hill, Chemical Plant and Sky Sanctuary, this meant finding ways to update them in full 3D. "It was important to respect and pay tribute to the original beauty and fun gameplay elements of each stage we included, and it was equally important to preserve the design motifs of the Classic levels (checkered patterns in Green Hill, blue pipe routes in Chemical Plant, etc) when modernising the textures and graphics, so the worlds all felt correct in the 3D space," Iizuka recalls. "There was a lot of trial and error as we explored how to do this before deciding on the final look, but once we secured the 3D design language and look of Green Hill, the rest of the stage designs all sort of fell into place."

Iizuka continues to explain the level design philosophy behind the Mega Drive stages, saying, "We put a lot of effort into preserving the original 2D side-view level design as this was critical in evoking a feeling of nostalgia from the essence of Classic *Sonic* titles. Then, we added new level design and gameplay elements when the stage turned into a 3D world-view to create fresh, new, and exciting game moments." When you play the game, it's easy to see this in action – just in Green Hill, Classic Sonic's Act 1 has plenty of S-shaped tunnels and swinging platforms, while Act 2 sees Modern Sonic grinding through a flooded cave and stomping through wooden bridges to access secret paths.

However, the majority of the stages in *Sonic Generations* originate from Sonic's 3D games. "For stages pulled from the Modern games, we added 2D side-view gameplay mechanics to bring a fresh, new gaming experience to the more recent levels at the time," Iizuka tells us. City Escape is a great example of this, with Act 1 incorporating the GUN truck as a persistent antagonist that will cut across Sonic's path,

BRING A BUDDY

THE TWO SONICS MAY BE THE STARS, BUT HIS FRIENDS HAVE THEIR MOMENTS IN THE CHALLENGE ACTS

KNUCKLES: HORDE OF ENEMIES

Sonic's rough and ready rival is always up for a bit of friendly competition, and in this case that means a race through Green Hill Zone to a remix of *Super Sonic Racing*. Just watch out for the Motobugs and Buzz Bombers, which are way bigger than usual.

TAILS: TOXIC SKIES

Getting a lift from the friendly fox has always been a good way to keep Sonic out of harm's way, but it's not an option for most of *Sonic Generations*. However, it's a necessity in this tricky stretch of Chemical Plant Zone, so make the most of him.

AMY: TAKING THE LEAP TOGETHER!

Sonic may despair of his clingy companion sometimes – quite often, actually – but she's the perfect partner for this mission. Using her Piko Piko Hammer, she can launch Sonic high into the air with a perfectly timed swing, allowing him access to areas he couldn't otherwise reach.

ROUGE: THE TEMPTRESS

The game instructs you to "have Rouge take out enemies using her wiles" and the jewel thief certainly does that, shooting a beam of hearts at Eggman's Egg Pawns that makes them go all heart-eyed and stunned. Why did he program them to be vulnerable to those feminine charms?

» [PC] Chemical Plant's undulating paths provide a real thrill ride in Modern Sonic's 3D stage.

destroying platforms as it goes. "Since using Boost is a primary way of having fun in Modern Sonic gameplay, we focussed on making that the focus of the 3D stages and providing great boost moments there," Iizuka adds, and moments like running down the skyscraper in Speed Highway transitioned effortlessly to that style.

Choosing to represent the entire series also meant the inclusion of stages from *Sonic Unleashed* and *Sonic Colours*, recent games that shared the Boost style. Was there any difficulty in ensuring that the *Sonic Generations* versions of the stages were sufficiently different to the originals? "Yes, there was," Iizuka confirms. "At the time, *Sonic Generations* was being developed right across from where *Sonic Colours* was being developed, so it was important that even though both teams were developing the same stages, the stages had to incorporate different level design to make sense for their different game concepts. Because the concept for *Sonic Generations* was already solidified, there wasn't any hesitation once we got into development."

Just as Classic and Modern Sonic diverged in gameplay styles, the musical themes for their stages did the same, with Act 1 themes tending towards more electronic musical styles, and Act 2 themes typically incorporating string instruments. The new arrangements and remixes

VECTOR: PICK UP THE BEAT

■ In this mission, Sonic has to play a bit of tennis with the crocodile behind the turntables, using the homing attack to return a musical note to him repeatedly during a fairly lengthy rally. This is generally considered to be one of the trickier Challenge Acts in *Sonic Generations*.

3D BLAST FROM THE PAST

HOW SONIC'S 3DS DEBUT DIFFERED FROM ITS CONSOLE COUNTERPARTS

n One of the aspects of the *Sonic* series that fans have come to appreciate over the years is the creation of bespoke games for handheld platforms, which often vary quite significantly from the hedgehog's home-console adventures. That tradition stayed intact for *Sonic Generations*. "Most of the assets created for the PlayStation and Xbox versions of *Sonic Generations* could not be used at all when developing the 3DS version of the game, so we focussed on different stages for the 3DS version, and really made two different titles celebrating the 20th anniversary of *Sonic*," Takashi Iizuka explains.

As with the *Sonic* games for Game Boy Advance and DS, the 3DS version of *Sonic Generations* was a collaborative effort with the external developer Dimps. "The team worked very closely with Dimps from concept development and co-development of the game to the end. I presented the core game concept, stages to create and the story, while Dimps worked on all the level design and development for the 3DS platform," Iizuka tells us. "I travelled a lot to the Osaka studio during development to make sure the 3DS game they were working on had the same *Generations* feel to the game being made in parallel in Tokyo by the Sonic Team."

In gameplay terms, the contrast between Classic Sonic and Modern Sonic stages is less stark on the 3DS. "We wanted to create the best experience for players on 3DS hardware, so from the beginning, we didn't add the 3D world-view perspective gameplay into the concept," says Iizuka. "However, we did want to expand on the 2D side-view gameplay by having platforming action that was true to Classic Sonic combined with game design and gameplay that would reflect the fun of Modern Sonic as well." This meant adding moves like boosting, sliding and the homing attack for Modern Sonic.

The main reason to seek out the 3DS version of *Sonic Generations* is that while it follows the same story beats as the home-console versions, it draws different stages and bosses from past games – for example, Mushroom Hill Zone instead of Sky Sanctuary Zone, and Big Arms instead of the Death Egg Robot. "We also wanted to do something unique for the handheld version, so we included stages from *Sonic Rush* only on the 3DS version," Iizuka notes. The game also brings back Special Stage chases for Chaos Emeralds, based on the ones that appeared in *Sonic Heroes*.

» [3DS] The Big Arms battle is the main love for *Sonic 3* across both versions of *Generations*.

NGamer felt that the 3DS game was "good-looking and fan-pleasing, but a bit short" and awarded it 79%. *Official Nintendo Magazine* also noted the short length, but noted the "huge selection of missions" and gave it 85%. Less impressed, GamesRadar gave it 3.5/5, and said that "there is plenty to enjoy if you bother to look outside of the main story mode" but complained that "the new levels are just too unambitious and end up playing like Sonic's recent DS outings".

» [3DS] Modern Sonic's viewpoint sometimes slants, but full 3D gameplay isn't present.

» [3DS] Radical Highway is a stage Shadow originally played, but we'll let it slide.

BOSS RUSH

SIX FAMILIAR FOES AND ONE NEW NEMESIS STAND IN SONIC'S WAY

METAL SONIC

■ Calling back to Stardust Speedway in *Sonic CD*, this encounter pits Sonic against his automated antagonist in a running battle. Metal Sonic will try to charge at Classic Sonic from behind, blast him with electricity and crush him with scenery, and is vulnerable when visibly exhausted.

SILVER THE HEDGEHOG

■ This telekinetic terror races through Crisis City, flinging cars and other debris at Sonic. When he levitates multiple objects, they create a path that allows you to use the homing attack to strike him. For the final phase, lateral movement will evade his attack and create an opening.

SHADOW THE HEDGEHOG

■ This is a reprise of the outer space race from *Sonic Adventure 2*. Stay ahead of Shadow to grab the glowing orbs that float around the stage, and once you've got two you'll be able to attack. Boost into the purple meteors to attack him, and you'll soon seal victory.

PERFECT CHAOS

■ *Sonic Adventure*'s final antagonist is back, and the first part of the fight is rather familiar – boost through the flooded city and head straight for the moist menace. In the second phase, you'll need to navigate a treacherous path of fragmented platforms to deliver the final blow.

DEATH EGG ROBOT

■ The final boss of *Sonic 2* returns, and thankfully isn't quite so resilient here. In the first phase, let it jump over you and then jump into its rear to knock it over. When the platforms appear, press a button to reveal a bomb, then lure Eggman into attacking it.

EGG DRAGOON

■ Returning from *Sonic Unleashed*, Eggman has given this plenty of attack patterns. It's easiest to hit when it stops and traps Sonic between two walls, allowing for wall jumps, but you'll be able to bop it in motion if you can avoid its fire and ice attacks and maintain top speed.

TIME EATER

■ The game's final foe is the traditional Super Sonic boss fight, and you can switch between Classic and Modern Sonic to shift the perspective of the stage. Launch your partner forward with the jump button, and don't forget to collect rings as they're constantly depleting.

» [PC] Even Classic Sonic's stages make use of the 3D visuals, twisting and turning even as Sonic's movement is fixed.

» [PC] Grab this helicopter at the beginning of Speed Highway and you'll uncover an alternate pathway.

» [PC] The GUN truck may not always chase Classic Sonic directly, but it's always a threat.

▶ came from a variety of musicians who had worked on the series throughout its history, including Tomoya Ohtani, Richard Jacques, Cash Cash and more.

Speaking to Sonic Retro in 2012, *Sonic Generations* sound director Jun Senoue explained that assembling the all-star team was a relatively straightforward process. "I heard about the levels we would have – Green Hill from the first one, Casino Night from the second – and then I heard about the different styles for Act 1 and Act 2. Then I just picked up the styles of music I wanted to get and I made a list of the musicians I wanted to team up with. I made some phone calls, dropped a line via email, and yeah, we had them," he said, though he did note that one desired collaborator proved elusive. "As for [Masato] Nakamura-san's music, I hoped I could team up with him to make an alternate version but he was not available," he lamented, referring to the composer for the original Mega Drive game.

For boss battles, Sonic Team chose a rival character of a similar stature to Sonic and a gigantic main boss for each era. Unlike the main stages, each boss was designated for either Classic or Modern Sonic, but the developers kept the core theme of the game in mind. "Act 1 stages were always nostalgic-themed, while Act 2 stages had more modern themes, so we kept the same concept for boss and rival battles. We created gameplay that was both nostalgic and new for them," Iizuka explains. "Specifically, we wanted the feeling of nostalgia to come through in the entrance scenes of the boss and rival characters, so we designed their entrance accordingly, then the gameplay would include new attacks and strategies to defeat the bosses and rivals to make for a fresh new gameplay experience."

As well as the main stages, players must complete a number of Challenge Acts to make progress. "Developing stages for all *Sonic* games – not just *Sonic Generations* – is a massive effort requiring a lot of time and energy. A stage that takes the development team half a year to create can be completed in no time because Sonic runs so fast. To get the most out of all the stage assets that took so long to create, we added Missions into the game," Iizuka remembers. The challenges included beating levels with a single ring, time attack goals and utilising particular power-ups to negotiate tricky areas. "For me, I really like the missions that involve co-operating with the other characters to complete because it reflects the 20th anniversary concept of the game," Iizuka says.

> "DEVELOPING STAGES FOR ALL SONIC GAMES IS A MASSIVE EFFORT REQUIRING A LOT OF TIME AND ENERGY"
> **TAKASHI IIZUKA**

When it arrived in November 2011, *Sonic Generations* received positive reviews. Though *games™* felt that "we could do without the need to complete three challenge levels before being allowed to move on to the next series of proper stages" it still felt the game was "one of the best *Sonic* games in recent years", with "some genuinely imaginative and exciting level design", enough to earn it 7/10. *360 Magazine* said "it's great to see Sega really nail the 3D formula" and gave it 4/5. Other scores included 84% from *GamesMaster*, 8/10 from *Official PlayStation Magazine* and 70% from *Play*.

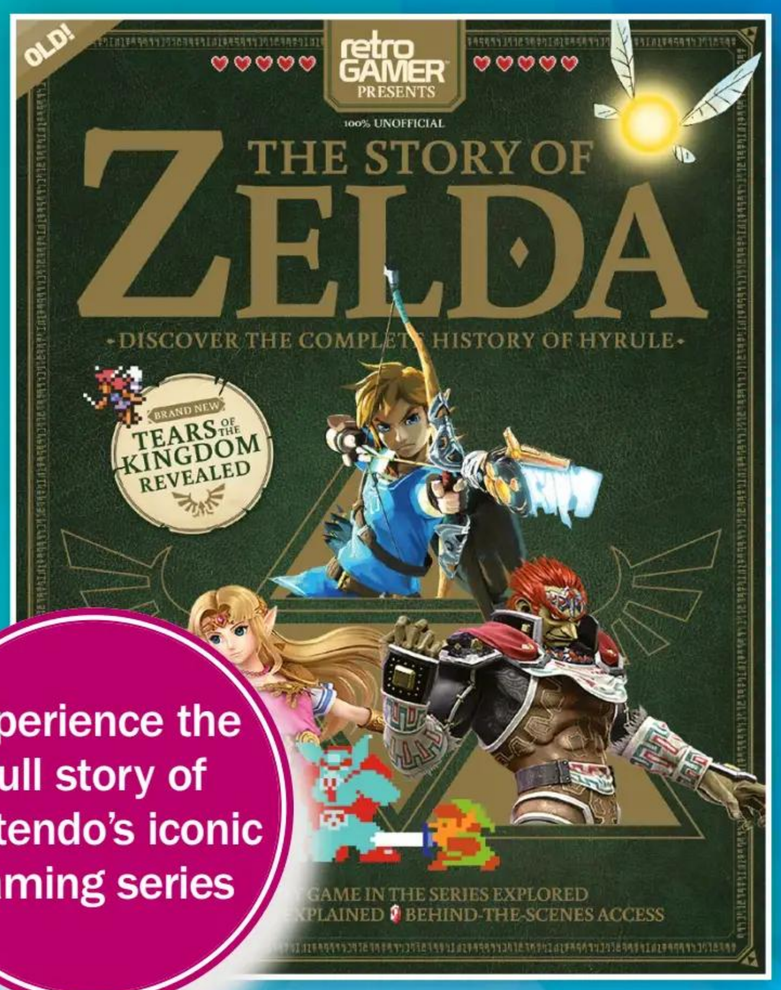
Sonic Generations wasn't just a critical turning point for the series. *Sonic Generations* managed to shift 1.85 million copies in its first six months and had a long tail, with the game still selected as a highlight in a 2021 financial statement from Sega. That success greatly influenced the future of the series. "Before *Sonic Generations*, we felt the Modern series moved the *Sonic* franchise forward from the Classic series, so the Classic series was regarded as Sonic's past. Our 20th anniversary title, *Sonic Generations*, was key in changing how we thought about things," Iizuka reflects. "Not only was it the first game to mix both the Classic and Modern series together, but it also made us think about preserving and growing both of those series as the *Sonic* brand continues, which ultimately led us to *Sonic Mania*."

After years of struggling to find a direction for Sonic, looking backward revealed the path forward. Examine the games that followed *Sonic Generations*, and you'll see a concerted effort to deliver on the heritage of the series. *Sonic Lost World* changed up the gameplay, but leans heavily on the highly stylised look of the early Mega Drive games, before *Sonic Forces* reprised the pairing of Classic and Modern Sonics and the gameplay associated with them. The aforementioned *Sonic Mania* took the opposite approach to *Sonic Generations* to critical acclaim, creating and remixing stages in a retro style, and *Sonic Superstars* has carried the Classic Sonic style forward.

If there's one thing Sonic fans love almost as much as the hedgehog himself, it's disagreeing with one another, and what's striking about *Sonic Generations* is its ability to unify such an argumentative bunch. Whether you wanted to blast through a 3D Green Hill Zone that would have been unimaginable in 1991 or desperately wanted to see Sonic and Shadow duel one more time, Sonic Team did as much as possible to fulfil those wishes, and the game is highly regarded as a result. So if you want to remember why you fell in love with Sonic all those years ago, or are simply curious as to what you've been missing out on, give *Sonic Generations* a play – you're bound to find something you'll love. ✱

» [PC] Seaside Hill is so striking in its updated incarnation, we're tempted to revisit *Sonic Heroes*.

» [PC] The thrilling final stretch of Crisis City Act 2 is a reminder that *Sonic 06* had some strong concepts.



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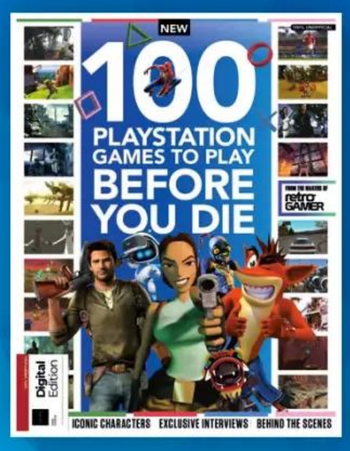

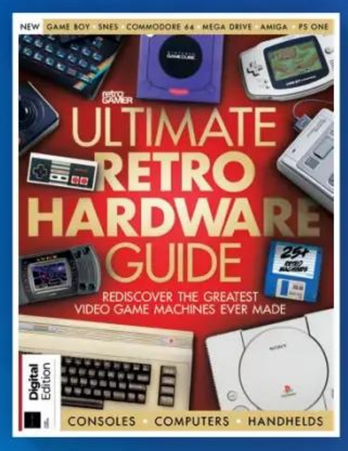
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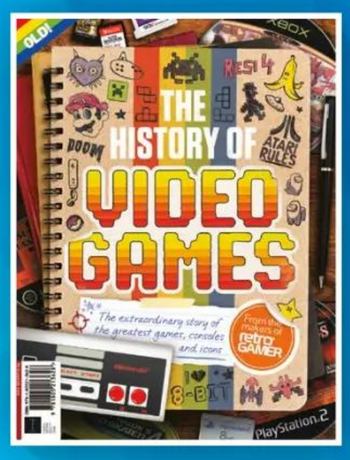
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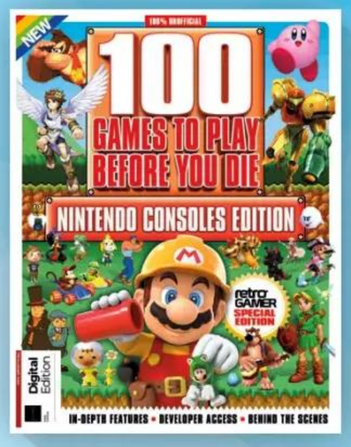
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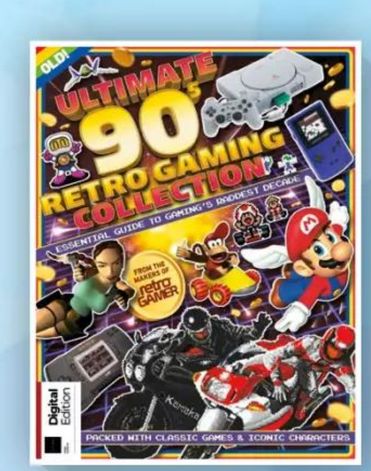
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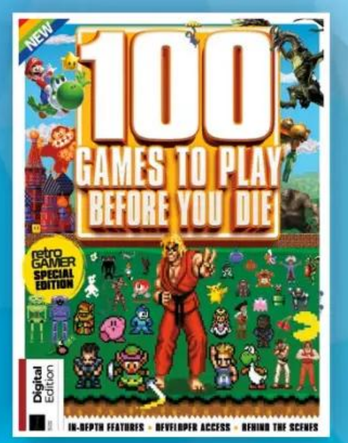
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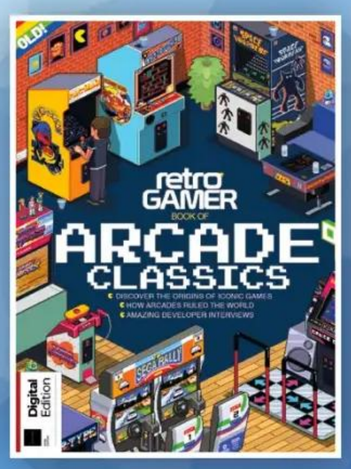

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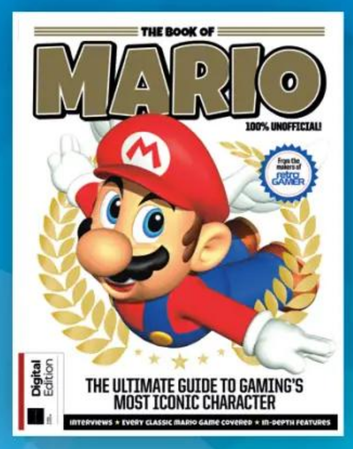

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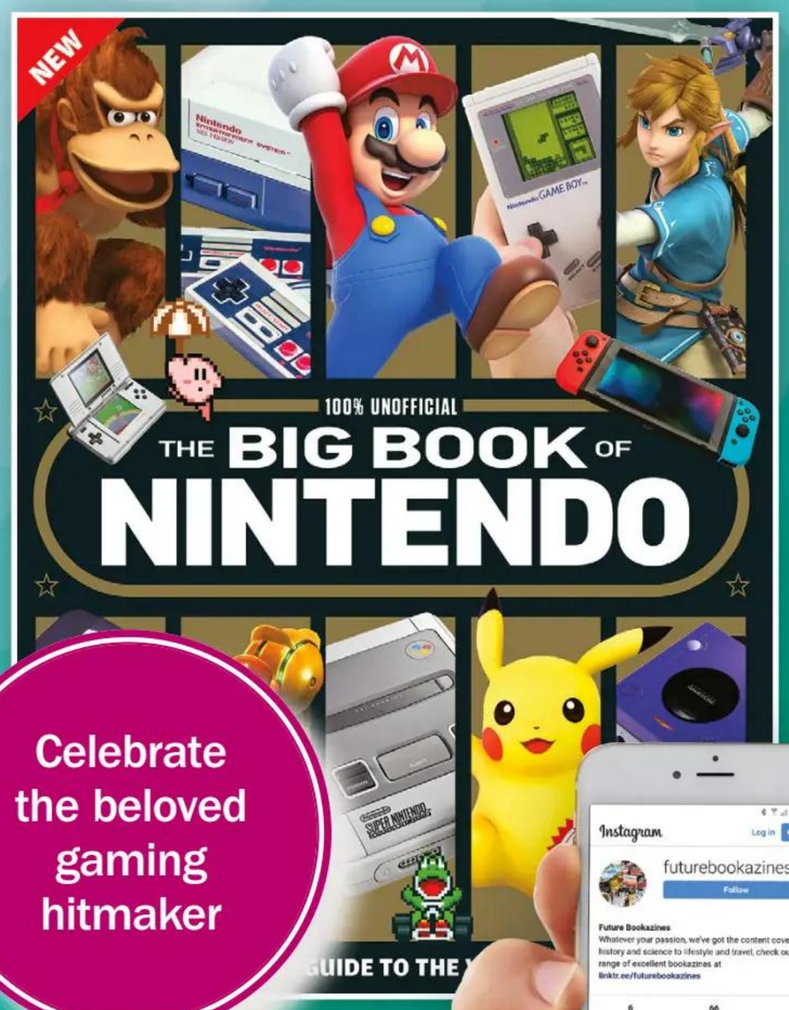

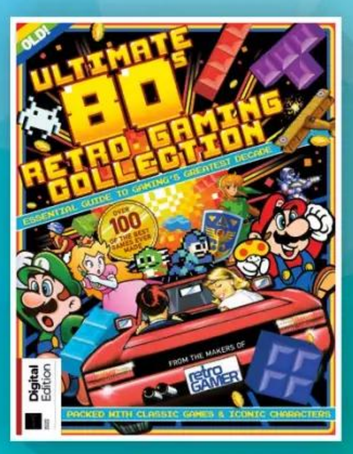

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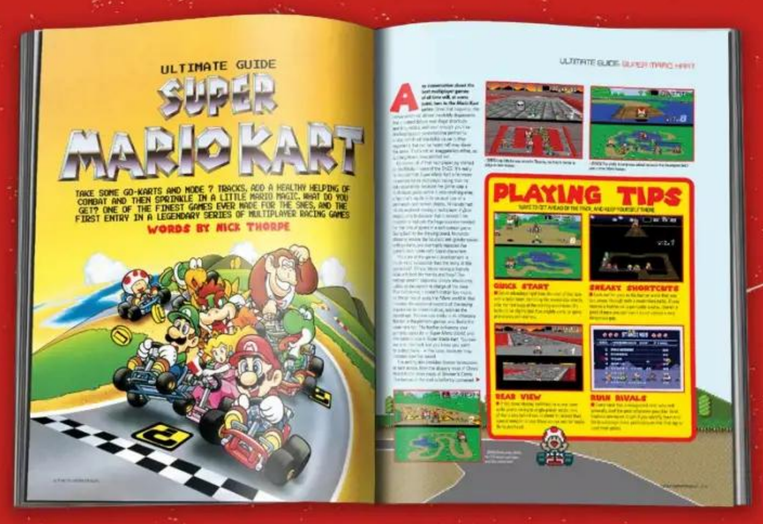
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